Critical Perspectives on Technology and the Family

By Susan K. Walker, PhD

Cover image: "The System," Creative Commons License: BY (attribution) Wonderlane. Digital DNA, City of Palo Alto, Art in Public Places, 9.01.05, California, USA

Suggested citation: **Walker, S. (2022). Critical perspectives on technology and the family. University of Minnesota Libraries Publishing.**

To contact Susan please email skwalker@umn.edu.

Social media:

Twitter: @susankwalker

Instagram: susanwalker4000

Facebook: /susan.walker.1042032

CONTENTS

Chapter 2: Ways of Understanding Families and Technology

Chapter 3: Differences Within and Across Familes' Technology Use

Chapter 4: Technology Use and Couple Relationships

Chapter 5: Technology Use and Impacts in Children, Youth and Young Adults

Chapter 6: Technology Use by Parents

Chapter 7: Technology's Influence on Parent-Child Relationships

Chapter 8: Technology Use for Family Communication and Connectivity

Chapter 9: What Boundaries? Technology's Role in Work and Family Balance

Chapter 10: Technology Use in Family Health and Money Management

Chapter 11: Technology Integration in the Practice of Family Professionals

Chapter 12: Shifting the Culture: Policy, Practice and Research toward Healthy Family Technology Use

ABOUT THE BOOK

"If you aren't in over your head, how do you know how tall you are?"
—— T.S. Eliot

To be honest, this wasn't an easy book to write. I blame my students. (jk 😉)

Let's face it. Technology and families is a really broad topic. Even when we refine "technology" to mean **information and communications technology (ICT)**, and accept that investigations into it are only two to three decades old, the topic along with the technology itself is expansive and always evolving. This book was written to accompany a course I designed in 2017 for the University of Minnesota; a course that filled a knowledge and practice gap of future professionals. I created that course and now write its text with the knowledge that learners are/would be a) individuals and citizens, b) in families and have meaningful relationships, and c) practitioners (probably), researchers (possibly) and/or leaders in some type of human service on graduation, so I felt it was important to cover topics that would inform each of these paths.

I believe that THE most important skill moving toward that metaverse is the capacity to think critically about technology in our society, what our use means to our well-being, how we are influenced by technology, and how we can advocate for a technologically-just society.

Creating and completing a usable product meant knowing when to *stop* writing — what to include, and what to leave out. The intent was to provide enough background to inform a contemporary understanding about the issues, and emphasize different perspectives to fuel critical thinking. The metaverse in 2040 offers a future only glanced at in this volume. I was guided in writing the book by what I felt students needed for their critical thinking and for use in their future work. This meant fighting a whole bunch of academic urges and silencing voices in my head and not including every new item that crossed my path daily. So, welcome to this relatively comprehensive journey into ICT's use by and impact on individuals and families, and the societies that they live in. My students and I hope you find it valuable.

About the book

Intention for Use

It can be the basis of or part of other courses, selected chapters can supplement reading in courses on child development, family life, couple relationships, modern society, or what have you. Perhaps it will serve as some kind of a personal or professional reference. The learning activities and blog prompts and reading lists can work as stand alone items or as inspiration for teaching and learning. Please use it as best serves your interest.

Although this book was motivated by an undergraduate course, it can satisfy are variety of reader interests.

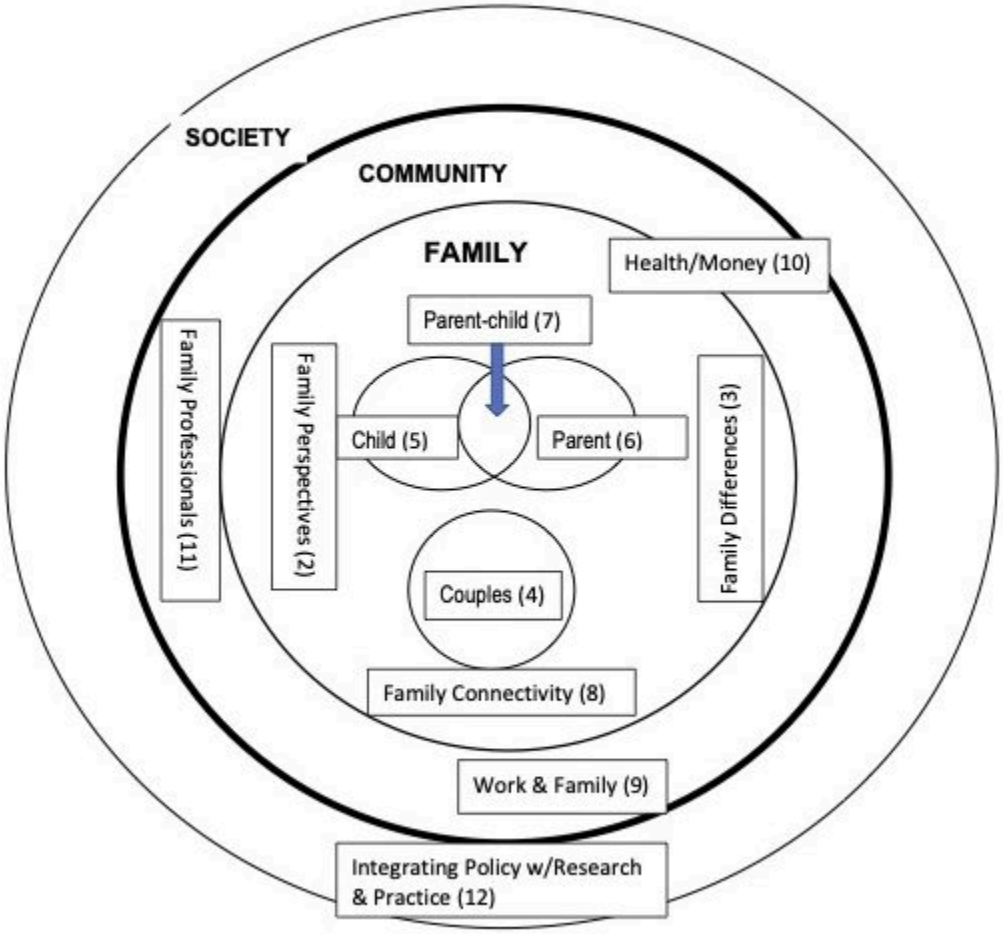
How to navigate this open textbook

This book was designed and optimized to be read online. You can navigate through the book by clicking the **Contents** dropdown and selecting a chapter. You can also navigate by using the **Next** and **Previous** links in the red bar at the bottom of each page.

If you require offline access, you can download this book as a PDF or Epub. On the title page under the cover image, click the **Download** dropdown and choose the format you would like to download.

Layout of the chapters

The figure below illustrates relationships among the book's chapters. After Chapter 1, an overview of our use of technology, we move to perspectives on the family (2) and family differences in technology use (3), then to specific components of couples (4), children and youth (5), parents (6), parents and children (7), and family connectivity (8), then to applications in families' everyday lives: work & family (9), and health and financial interests (10). Also at the community level are the family professionals who provide services to families through education, therapy, and more (11). At the widest level is policy (12), which intersects all levels.



Chapter contents

Each chapter offers:

- **Content**, with chapter Insights, or key takeaways.
- **References** for everything cited in the chapter.
- **Learning activities** that promote critical thinking.
- **Blog prompts**. The course this course was built around included critical though blogging. In our digital worlds, it's important that professionals be able to write online thoughtfully and with technical precision; to have a point and be able to back it up. More about this is offered in the next section on Teaching the book.
- **Additional reading and resources**. More ways for readers to explore topics beyond the minimal treatment the book allows. There are readings, videos, news links and more.

The back of the book features a non-exhaustive list of additional books, websites, bloggers, journals that publish at the intersection of human development/family life and information and communications technology, and other related content. I've also included the oft-cited 50 Classroom Assessment Techniques from Angelo and Cross. These are fabulous tools on which to construct tailored activities for learning.

In addition to the content, then, I provide additional ways to understand it. Reading to learn isn't enough; we need to experience topics in multiple ways, connect them to our interests and what motivates us, to make them stick. (See "Teaching the book" section that follows).

ABOUT TEACHING FOR CRITICAL PERSPECTIVES ON TECHNOLOGY AND THE FAMILY

Critical thinking about information and communications technology ICT), the self, family, and others

The book and course around which it was written adhere to Davies' (2015) model of critical thinking in higher education by placing cognitive skills and arguments at the center.

Competencies promoted throughout represent Bloom's taxonomy (knowledge, comprehension, application, analysis, synthesis, evaluation) and those represented in problem-solving and decision-making models (Brookfield, 2020). Critical "propensities" further represent the "critical thinking movement:" affective, dispositions, emotions, attitudes, and states of readiness. These relate to the self (e.g., tolerance of ambiguity, perseverance, desire to be well-informed), to others (e.g., respect for alternative viewpoints, understanding of individual differences), and to the world and social conditions (e.g., interest, inquisitiveness, Halpern, 1998; p. 58). [1].

Turning to the book's central focus, is **Mike Ribble's (2015) reflective framework for teaching digital citizenship**:

- **Awareness:** Being aware of technology use and its appropriate use (critical and reflective thinking).Students are asked to reflect on their technology use at home and at school.
- **Guided practice**: Classroom active learning and out-of-class activities for exploration.
- **Modeling and demonstrating**: Instructor use of Creative Commons licensed material, competence with technology, being curious about intersections and other perspectives, respecting privacy and safety in sharing content.
- **Feedback and analysis:** Deliberation and debrief, feedback on student writing, commenting on

1. Here are some helpful ideas for integrating critical thinking into teaching: https://www.teachthought.com/critical-thinking/critical-thinking-questions/) Additional ideas are offered at the back of the book through 50 Classroom Assessment Techniques by Angelo and Cross

collaborative (classwide) work.

Therefore, the book's text and complementary material encourage the reader to think critically about the topic. And through that critical perspective of analysis – weighing multiple sides of an issue, questioning extant research, searching for policy, applying the content to one's own life and standing back to ask about the impact on others and the wider society – the goal is that our use of ICT to be more thoughtful and more intentional.

Often questions will appear in the chapters that will prompt thought and application of the content.

Chapter content and flow:

- **Text** summarizing key content, research and practice. As noted in the About the Book section, the flow of content aligns with an ecological perspective of family life. It also reflects the delivery of content over an academic semester. Chapters 1-3 as introductory and foundational, chapters 4-10 as individual and family specific content, and chapters 11 and 12 and wider field and societal applications. While some content can be covered in a single week, longer chapters such as chapter 5 can take at least two weeks during a semester. Depth of coverage and complementary materials for reading are up to the instructor's discretion.
- Complete **references** are included so that university libraries' online catalog can be linked and readers can go to original sources if desired.
- **Learning activities** include those I created and used in the FSOS 3105 course and many others written expressly for this volume. They include individual, small group and whole class exercises, which can be used in higher education and other adult learning settings. Rather than take attendance, I used activity participation as a measure of engagement.
- **Blog prompts** encourage both critical writing for online presence and perspective on issues. Too often, IMHO, young adults offer stream of consciousness in online writing and leave the technical for academic papers that may never see the light of day. For some blogging is a way to not only share one's professional voice and perspective, but also as a career outlet. [2]. The blog prompts also make for interesting conversation, and can be used to prompt podcast or YouTube channel discussions.

The **additional readings** at the end of each chapter are a mere path to the wide wide world of evolving knowledge on these issues. Thought leaders, organizations like Commonsense Media, Pew research and the 5

2. Guidance and a grading rubric offered to students for their blog posts can be found here: https://drive.google.com/file/d/0BzmNDCEoQttaSlRfSjZGWXhUZUU/view?usp=sharing&resourcekey=0-QX87TTny0ipCMlQrjA3vOg .

Rights Foundation frequently have updated material. From semester to semester, new material was added from posts I saw on social media.

In FSOS 3105, in addition to blog posts, activity participation, and exams for assessment, students prepared an analysis of their technology use. They logged use for a 24 hour period, then provided a summary of the data and a paper analyzing observations of their use, impacts on their relationships, and ways the exercise inspired their future work as professionals. **A copy of the assignment given to students is available here .**

Learning through community

In my 40 odd years of teaching and observing what "sticks," I've leaned in to Dr. James Comer's words that, "No significant learning can occur without a significant relationship." It is a practice applied to the FSOS 3105 Families and Technology course with great success, based on student feedback, performance, engagement and observation.

I've learned to lean into Dr. James Comer's words: "*No significant learning can occur without a significant relationship.*"

Through relationships and feeling part of a community, individuals feel valued and have a sense that their perspective and their voice matters. That includes the relationship to themselves. As they feel a sense of trust, they begin to open to the perspectives of others; their own perspectives shift, and their understanding deepens. They gain empathy for others' view points. They may want to take action — for themselves, for others. And they deploy content knowledge that otherwise can seem unrelated to their lives. There is good learning theory behind this (e.g., Lave & Wenger, 1991; Mezirow, 1990; Wenger, 1999) and clear connection to critical thinking.

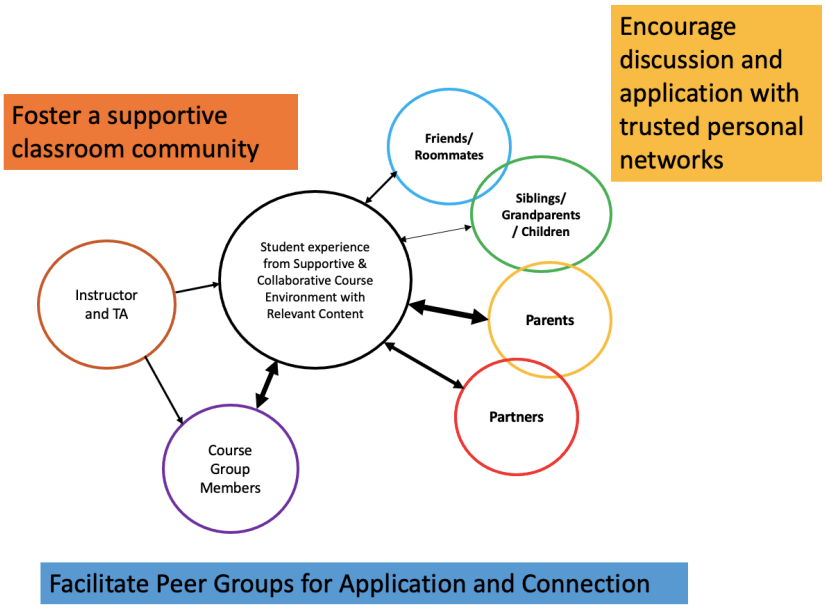
As evidence somewhat of the importance of relationships for learning critical thinking skills related to technology and the family, in spring 2022 the fabulous Samantha LeBoeuf (my Teaching Assistant at the time) and I analyzed student responses to the end-of-course question: *How did relationships, if at all, influence your learning in this course?* (Walker & LeBoeuf, 2022). Again validating the ecologies that inform our lives, students offered **three relationship types,** each with unique influence:

- **Family and friends**: Discussion of topics in the course made the content more relatable. As one student said, "*applying theories and technology to my life is how I learned better; if I can apply something to my life then I think I will be able to apply it to other families.*"
- **Classroom peers**: The shared experience of learning the same content, together and for a common purpose, bonded students in their discussions. One student shared, "*[My group] has influenced my learning in this course. I believe that not only did our ideas for group discussion come from what we learned*

in class but also how we related to the topic. As a result, it was really fun to hear about all of our ideas and how [they] related to our personal lives, which made the course even more meaningful."

- **Instructor and TA**: These set the tone for community and for shared learning as a class. In so doing, they encouraged each student to feel valued and heard. *"[The instructor] made everyone always feel included and that made me personally want to be there in class."*

The graphic below reveals these relationships and summarizes processes that foster learning through relationships.



There are MANY ways to accomplish these learning relationships to foster critical thinking. The flow of content in this book, and the occasional questions and blog prompts and learning activities, all aim to do this.

The instructor is key to creating a supportive classroom community. I do this through a) power diffusion, b) respecting and encouraging all voices, c) attunement, and d) humor. In formal education there is a clear power dynamic through the conferring of grades and the hierarchy of academia. Students begin to see themselves valued only as numbers — their student number, their GPA, their last score on an exam. This depersonalization does not encourage them to "see themselves" in the material. So even before a course begins, my messaging, my video greeting, and then my classroom climate are all aimed toward equity. Students are called by their first names, we make eye contact, celebrate birthdays, and laugh. A lot. Often at me. I look at posts like this one in Edutopia to find even more ways to build community. As I do as a parent, I also try to

The instructor is key to creating a supportive classroom community.

attune myself with the class (some call it "reading the room") and pick up energies — sometimes addressing events, oftentimes tuning into student mental health (during the course of the first five years, the Parkland shooting, George Floyd and Philando Castile murders in the area, January 6 insurgency and of course COVID-19 occurred). That might mean spending more time discussing a particular topic or event, or clarifying key points when I sense that students are not feeling prepared for an upcoming exam. I'm well aware of my age; I use my geezer experiences in teaching, and encourage discussion by using the age difference to ask what things are like for young adults. I'm also well aware of my position of power, and always default to communication and compassion. And my personal "brand" is humor. I post funny videos, pictures of my dog, and ask students to tell stupid jokes.

But you do you. ❤️

As our use of technology is less reflexive and more intentional, we will know where our advocacy and where change for the future is needed.

There ARE many ways to foster our learners' (and our own) critical perspectives about information and communications technology use in our society, it's impact on our own well-being, relationships with others, use as practitioners or researchers or leaders and family members. The advice and resources I offer here are but a few.

References.

Angelo, T., and Cross, P. (1993). Classroom Assessment Techniques: A handbook for college teachers, 2nd Ed. San Francisco: Jossey-Bass.

Brookfield, S. (2020) Teaching for critical thinking. In V. Wang (Ed.), *Handbook of research on ethical challenges in higher education leadership and administration*. IGI Global publications. DOI: 10.4018/978-1-7998-4141-8.ch012

Brookfield, S. (2017) Becoming a critically reflective teacher (2nd. ed.). Jossey-Bass/Wiley.

Casigrahi, B. (2017). Fundamentals of teaching critical thinking in higher education. *Journal of Education and Human Development*, *6*(3), 98–103. doi:10.15640/jehd.v6n3a11

Davies, M. (2015). A model of critical thinking in higher education. In *Higher education: Handbook of theory and research* (pp. 41–92). Springer.

Halpern, D. F. (2014). *Thought and knowledge: An introduction to critical thinking* (5th ed.). Psychology Press/Routledge.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press.

Mezirow, J. (1991). *Transformative dimensions of adult learning.* Jossey-Bass.

Ribble, M. Digital citizenship in schools (3rd ed.). International Society for Technology in Education (ISTE).

Walker, S., & LeBoeuf, S. (2022) Relationships in teaching for critical thinking dispositions and skills. 7th International Conference on Higher Education Advances (HEAd'20), Universitat Politecnica de Valencia, Valencia.

Wenger, E. (2010). Communities of practice and social learning systems: The career of a concept. In C. Blackmore (Ed.), *Social learning systems and communities of practice* (pp. 179–198). Springer. https://doi.org/10.1007/978-1-84996-133-2_11

WITH GRATITUDE

This work is dedicated to the many **MANY students in my classrooms on college campuses, in the community, online, and in person** over the last 43 years. The gift of what you taught me about teaching, about community, about how people learn, about people cannot be easily conveyed with words. To hone in on one group, thank you to **the students in FSOS 3105** from fall 2017 through spring 2022. You truly shaped the contents and the philosophy and the ❤️ of this book.

Massive hugs 🤗 to my family. My husband, **Patrick**, with his slightly geeky, IT-forward nature, was an inspiration to me by having lots of tech around the house and nudging me into using it and loving it. My daughter, **Alice**, honestly motivated my bridge from tech as a teacher, to technology in parenting and family life education. When I witnessed her capable use of multiple devices at age 14, I imagined our profession with a generation of tech-savvy parents who had expectations for what and how we taught. This book, and my interest in this topic, would not have existed without these two, my constants, who continually fed my curiosity. And **Audrey**, my pug, has been my velcroed companion for the last 16 years and has provided emotional support during my adventures.

Susan and Audrey

I also thank the most amazing **Samantha Daddi, George Schorse, and Sahar Khanpoor**, who assisted me with finding resources for the book. As former 3105 students and young adult tech users, they also provided tremendous insight. Thanks too to **Samantha LeBoeuf, Seonghee Hong, and Becca Leaf,** who served as TAs for 3105; to **Xiaoran Sun**, who shadowed, supported, and strengthened my final semester in the classroom and who is most capably taking 3105 forward; and to the incredible women and men who, as graduate and undergraduate students, assisted me in years of research to help me better understand this topic (with special shout out to **Tatiana Jara Pacheco and Bosco Cheng**).

Buckets of appreciation as well to **Shane Nackerud and Emily McLoughlin** with the UMN Libraries, and to **Sue Everson**, who helped copy edit my many many words.

Applause to **those who gave me opportunities to dig in to this topic over the last decade or so.**

- the St Paul ECFE program and especially **Elizabeth Hoodecheck** (a most remarkable parenting educator) and Loren Terveen in Computer Science, who took a risk on a tech-design rookie in 2013 when we desired *Parentopia* (the miraculous appearance of **Jake Larson** helped).
- the National Council on Family Relations who invited me to author a chapter on Families and Tech for a 2015 volume of *Family Life Education*, collaborated on a 2017 national study of family professionals and technology, and agreed to a re-launch of the Families and Technology Focus (special interest) group.
- the FSOS department at the UMN who gave me space to develop the Families and Tech course in 2017. And to my Learning Technologies colleagues in the college (CEHD), colleagues in Computer Science, Chris Greenhow, and to and professional associations like Computer Supported Collaborative Learning/International Society for Learning (CSCL/ISLS) who motivated my cross-discipline creativity.
- And to the United Nations who commissioned my writing on Families and Technology in 2021 who, along with the International Federation on Family Development (IFFD.org) continue to be global collaborators.

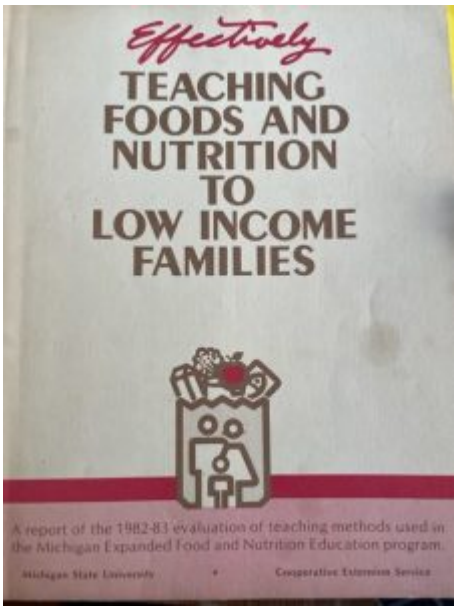
And finally, **thanks to my colleagues who pioneered our move from family science to an integrated view of families and technology**. This includes the many practitioners who wade into this new landscape with more curiosity than resources. Please know that **your practice, your research, and your efforts at conceptualizing this new world continue to be a beacon for many – including and especially me.**

ABOUT THE AUTHOR (OR, THE PAYOFF FOR PAYING ATTENTION)

Rather than post a CV [1] or biosketch, I share the journey that brought me to writing this book. It brings truth to Mary Oliver's words:

"Pay attention. Be astonished. Tell about it!"

From post-college at 24 in 1979 through the early 1990s, **I was a practitioner in service to families** — first in the public health realm after completing a Masters in Nutrition (Penn State University), then much later in the field of parenting and family life. I had the honor of working with a wide range of families — most of them living in poverty and on public assistance — in a variety of government, non-profit, education, and industry environments, and seeing how internal and external systems played out to affect family well-being.



EFNEP report authored by Susan in 1983 for Michigan State University

For the next 15 years or so, I capitalized on my doctoral training (PhD in Child and Family Studies, UW-Madison), and in my academic positions worked **to create systems of change on behalf of families.** Through Cooperative Extension in Wisconsin and then in Maryland, I developed community-based tools for assessing supports for school readiness, community-peer leader training in parenting, child care provider training systems, and policy tools for assessing child care policy and equity during the era of welfare reform. A move to Minnesota and the UMN in 2007 gifted me with immersion in Early Childhood Family Education (ECFE), and with oversight of the graduate program that prepared licensed parenting educators to work in school districts delivering ECFE programs. With ECFE, I created an evaluation tool that could assess parenting and child development outcomes, and could mobilize advocacy for statewide program support. While the goals of each effort were admirable, program success only occurred through coordinated, committed action across the policy-practice and research spectrum (meaning that I saw cracks in the system).

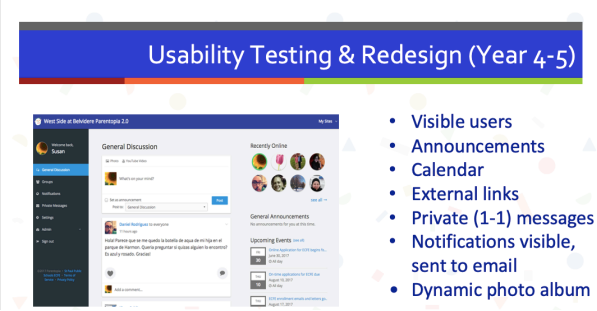
1. though I'm happy to share it if you'd like to see it

Along the way, **I also found my passion as a teacher.** With undergraduate instruction firmly a part of my academic role in 2002 — and continuing for the next 20 years — I honed my teaching skills and, more importantly, developed an understanding of contexts and methods that promote engagement and learning in an ever-diversified body of students.

the author in her Halloween sweater shared with online and in person classes

Meanwhile, **technology crept into my professional and personal world.** When my dean at Maryland wanted courses to go online in 2005, I volunteered my own. It seemed a great way to make courses more accessible, as our community college peers had been doing for decades. This experience aligned well in my new role teaching teaching in the UMN Parent and Family Ed program (teachers license, Masters of Education) in 2007. Ours was the first online masters program for my college at a time when university policy hadn't quite grasped the online world. It also facilitated our global outreach and a significant collaboration with the University of Iceland.

In 2007 I observed my own daughter, then 14, capably using multiple devices and apps to connect with her friends. Like a bolt ⚡ of lightning my two worlds collided. It struck me that, in ten short years, her generation would be parents coming to parenting education with a whole new set of expectations for learning. **I began researching parents' technology use, and the ways ICT was used by educators who worked with parents.** On the latter I discovered that while the big E world of Education was having fun with all this new technology, our own field of parenting education was not. I leaned heavily on groups like AERA and ISTE and on my learning tech colleagues at UMN to inform our family educator world. Seeing colleagues join this new area of study, including my early collaborator Jodi Dworkin and many of her PhD students, I re-constructed the Families and Technology Focus Group at the National Council on Family Relations (NCFR) as a place to share resources and ideas and a new professional identity.



Loren Terveen, from Computer Science at the UMN, connected with me in 2012 on **creating technology for ECFE**, and with funding from the National Science Foundation and cooperation with the St Paul School District, *Parentopia* was born. ECFE families told us they didn't need another content-based platform for information about parenting; they wanted a place to connect between meetings. The development, research, and implementation of *Parentopia* became my passion for the next ten years. Through it I discovered the

power of collaborative technology for parents, and that innovation is less about creating it than helping people access it and know how to use it. This is true not just for parents, but for the professionals who work with them as well. When the United Nations invited me to write a background paper on digital technologies the family, and parenting education in 2021, I had LOTS to say.

Enter FSOS 3105 and this book. As a member of the faculty **I asserted (OK, shouted) the need for our undergraduate students to be prepared for professional and personal life in a digital universe.** Naturally that meant I be the one to create such a course and teach it. And so, in 2017, we launched **Technology and the Family, FSOS 3105** to the first semester of plucky students. Five years and 10 semesters later, after teaching the course, and learning a ton from my students, I present the textbook. A dynamic, online, accessible, free text; one that reflects the many many principles and realities about family life, about teaching and learning, and about technology and global change that I've witnessed across my career and continue to explore through the most amazing connections.

Thank you for joining me! I hope you're astonished!

CHAPTER 1: TEN TRUTHS ABOUT TECHNOLOGY

1.1 TEN TRUTHS ABOUT TECHNOLOGY

Change is inevitable; growth is intentional.

—— Colin Wilson

Chapter Insights

- Although our use of the internet is just 30 years old, and seemingly ubiquitous devices like smartphones have been around for less than 20 years, observations about digital media and "technology" offer us a foundation of basic "truths" with which to dig deeper.
- Although we may use the shorthand term "technology" to refer to information and communications technology (ICT), we must be cautious. "Technology" is a general term, and we have various, more specific ways to talk about ICT.
- The ICT devices and applications we use help fulfill a range of functions for us as individuals and as families.
- Because research on technology is relatively new, and technology innovations continue to develop, using research findings to craft clear guidelines on use is a challenge. Current research has significant limitations in scope, sampling, methodologies, and more. Technology innovations do, however, mean new ways to gather and analyze data.
- An ecological perspective enables us to see our ICT use not just in terms of individuals, but as having an impact on and being impacted by our contexts and social connections, and by wider forces such as institutional policies, research, and industry.
- To date, we can identify a great number of benefits to individuals, families, and societies in the US and internationally from ICT use. At the same time, we have learned that ICT presents significant challenges to our relationships, communication, development, learning, and work.
- Equitable access to the internet, to devices and to the development of skills for using ICT, is a

significant factor influencing differences in how technology is used.
- After reading this chapter, identify what you feel inspired by, the questions that remain for you, and the steps you can take for your own technology use to be more intentional.

Introduction

When I went to college in the mid-1970s, the weekly call to my parents meant waiting in line to use the pay phone in the dormitory hallway. It was a collect call, meaning I'd go through an operator who would ask the person who picked up if they'd accept the charges. Or I could write a letter. Registering for courses meant long lines and a half day in the gymnasium, going from table to table to get a form signed by the department (IF there was room in the course; if not the search continued in another line). For classes, we sat in lecture halls taking notes with pen and paper. Professors lectured at a podium, using a chalkboard and the occasional overhead projector.

UWGB Alumni News and Events

Tests were ONLY taken in the classroom. Books were hard copies, purchased at the bookstore. Term papers were written by hand or on a manual typewriter. And doing research for those papers meant finding books using a card catalog, and articles in large, published volumes of the journals, hidden away in the "stacks.". The only way to communicate with professors was to wait outside their offices during weekly "office hours." Pizza was ordered over the phone (though delivery was possible), and when Saturday Night Live (SNL) was on, we'd jockey for floor space to view the TV in the dormitory common room.

Consider your college experience today. Everything just described can feasibly be done on your smartphone and you'd never need to leave your bedroom. Remember Covid-19 [1]? (Of course you do). The internet [2]and ICT enabled us to continue participating in life, even under quarantine. Today you can call, text, videoconference, or email your parents anytime (and they you). Textbooks (while often still available in hard copy) may be offered as e-versions, purchasing can be done online, and many can be rented. Class registration and course planning, ordering pizza, finding journals, and taking notes for the term paper? Online. Platforms like Google Docs make collaborative note taking or group work efficient (this book was written on Google Docs so I could share it with the folks helping me publish it). Missed SNL? You can stream it on demand.

1. Throughout the book the coronovirus of 2019 will be spelled COVID-19 or Covid-19 as there doesn't appear to be an agreed upon convention on capitalization of this disease
2. On the other hand, the accepted spelling of internet is internet (not Internet) and this will be consistently followed through the book.

As you compare what it was like in the 1970s (and, let's face it, the 1980s and the first half of the 1990s) with your ICT-accessible life today, is there anything you might even envy about a world without the internet, where our idea of personal technology was a corded landline telephone? Or does the idea seem simply unfathomable (or, go ahead and say it, revolting)?

Here's one man's perspective on living without his smartphone:

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://open.lib.umn.edu/technologyfamily/?p=527#oembed-1

My intention is not to sing the praises of the "good old days." Indeed, the efficiency of ICT in our lives offers us unparalleled (for now) opportunities for social interaction, information, and news gathering, and for creativity and productivity. The United Nations, Division of Economic and Social Affairs identified technological change as one of four megatrends affecting families (along with urbanization, migration and climate change). As we will explore throughout this book, while we have gained much, there is so much more we need to know. We are still in the infancy of understanding ICT's capabilities — and its dangers. The rapid rise in technology development makes it difficult to turn around usable research results. By the time all the necessary protocols are followed, data collected and analyzed, and reports prepared for public, professional and policy consideration, the device or application studied may be outmoded. Research has revealed a great deal about who uses which types of technologies for which purposes under which conditions, we have an initial sense of impact (as you'll read in this book), and scholars are learning both new questions and new methodologies. The Screenome Project, for example, enables researchers to analyze the realities of smartphone use through thousands of screen captures (Brinberg, et al., 2021). But while new technologies for information and communication are being developed, and our consumption and use alone and together offer fodder for research, the many unanswered questions put us in pioneer territory.

And undeniably, our use of devices like smartphones can raise a few eyebrows:

Used with permission

A friend posted this picture on Facebook, taken while people were waiting for a cruise. Our own use makes technology seem personal, yet when observed in large groups like this we begin to see how technology has shifted the ways in which we relate as a society.

And questions of culpability arise when behaviors once contained by place move to virtual spaces. In the early 2000s, before university policies had evolved to address virtual learning, I encountered an issue while teaching online before . For weeks, a student posted erratically in discussion forums, creating havoc in student discourse and learning, with behavior that stole focus from the content of the course. In a traditional classroom, I could talk to the student privately, even barring them from returning to the classroom while they were being disruptive. Yet back then, barring a student from the learning management system (LMS) used to deliver all components of the course prohibited access to all course materials. After many hours of discussions with university policy makers unfamiliar with how online learning operated, a timely yet equitable workaround was reached. By then, the offending student understood their disruptions and class continued in peace. The upside is that the event triggered the need to develop *new policies for a new environment* and new mechanisms for student learning and instruction.

Similarly, in response to issues with e-commerce, security breaches, identity thefts, and children's exposure to the internet, new policies and laws have been created. This book was written for the spaces of our use between innovation, eager consumption, earnest research, and policy action and sound practice, spaces that call on us to be both educated and intentional about our use of technology. Particularly for families who bear the significant responsibility of caring for their members — in many cases raising children to adulthood — and thriving as a unit, ICT offers tremendous value yet at a significant level of understanding.

To set the stage for our close examination of technology use and the family, we begin with a set of "truths" about information and communications technology.

Technology Truths

#1. Technology can be interpreted to mean many things.

In our daily language (and in this book) we refer to our use of "technology." Although we may use this shorthand term to indicate our use of smartphones and the internet, in its strictest sense "technology" refers to "the use of science in industry, engineering, etc., to invent useful things or to solve problems." (Merriam-Webster). In fact, any novel device developed for problem-solving, such as pencils or maps, can be considered technology. More specifically to our interests here, Wikipedia defines **"information and communications technology (ICT)"** as that which "stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals) and computers, as well as necessary enterprise software, middleware, storage and audiovisual, that enable users to access, store, transmit, understand and manipulate information." This brings us closer to what we're really discussing in this book.

This brief video nicely defines the scope of ICT and impacts it has on our lives

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://open.lib.umn.edu/technologyfamily/?p=527#oembed-2

Throughout this book although we will shorthand with the word, 'technology,' we primarily will be referring to information and communications technology.

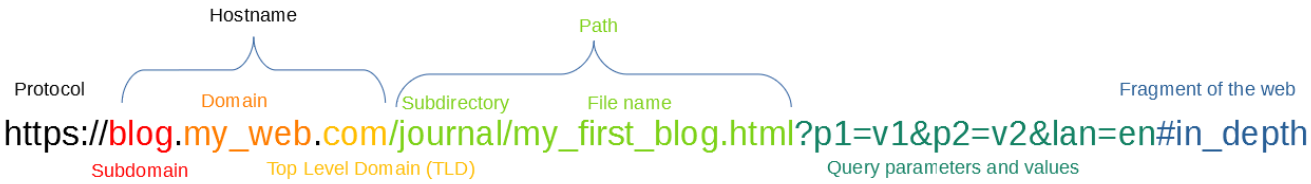
ICT spans a range of devices, software to run applications, and the applications themselves. Yet it's important that our thinking isn't limited to the devices we currently use, like computers, gaming devices, smartphones, and tablets. Futurists see us using glasses that read books and enable us to feel like we're in the setting, or headgear that allows us, for instance, to enjoy a virtual landscape in South America.

The internet

Within our broad sense of ICT is the "internet," Per wikipedia, "the global system of interconnected computer networks that uses the Internet protocol suite (TCP/IP) to communicate between networks and devices. [3] The internet carries many applications and services, most prominently the World Wide Web, including social media, electronic mail, mobile applications, multiplayer online games, internet telephony, file sharing, and streaming media services. Most servers that provide these services are today hosted in data centers, and content is often accessed through high-performance content delivery networks." The internet is the virtual environment in which information (as data) is gathered, shared, and engaged with. Two common aspects of the internet are the World Wide Web and, within that, social media.

To stay current on the language and terms used to describe ICT, see this article from the BBC.

The World Wide Web (WWW)



Elements of a URL (uniform resource locator). Credit: RubenAyla.blogspot.com

When we "go online" we generally mean that we're connecting to the World Wide Web[4], or to a website which is a compilation of web pages. The web is "is an information system enabling documents and other web resources to be accessed over the Internet.... Documents and downloadable media are made available to the network through web servers and can be accessed by programs such as web browsers. Servers and resources on the World Wide Web are identified and located through character strings called uniform resource locators (URLs), as shown above. The character string https://www.wikipedia.org is an example of a URL.

Breaking down the web address, **http://** or **https://** refers to the communication protocol used for the information's transmission. The "s" indicates when secure information, such as passwords or identifiers, is

3. Readers are strongly encouraged to follow the Wikipedia link to read more about the internet, its scope, history, and governance
4. Readers are directed to the Wikipedia page for the World Wide Web for detailed descriptions of common terms like browsers, servers, cache, and cookies.

being shared. The domain is the hostname (which includes the **www**, though it often isn't shown). Host server domain names are controlled by ICANN (the Internet Corporation for Assigned Names and Numbers). *.com, *.net, *.edu, and country-level identifiers (e.g., *.en, *.us, *ie) refer to top-level domain names.

Social media

Social media, or social networking services (SNS), "is an online platform which people use to build social networks or social relationships with other people who share similar personal or career content, interests, activities, backgrounds, or real-life connections.... Social networking sites allow users to share ideas, digital photos, videos, and posts, and inform others about online or real-world activities and events with people within their social network. While in-person social networking — such as gathering in a village market to talk about events — has existed since the earliest development of towns, the web enables people to connect with others who live in different locations across the globe (dependent on access to an internet connection to do so)."

Social media scholars have leaned on the functionality of the internet application, such as for self-presentation to broad or narrow audiences (Kaplan & Haenlein, 2020, Fig, 2, below). By Carr and Hayes' (2015) definition, Facebook, LinkedIn, games like Farmville, and the dating app Tinder would be considered social media; collaborative platforms like Wikipedia[5] and email, or a streaming platform like Netflix, would not be. Other scholars focus on identity as the central feature and purpose of social media — the presentation of one's identity through social interaction and having an audience. Social media is also classified by the audience and functionality of its reach (Thelwall, 2009):

- socialization SNSs, used primarily for socializing with existing friends (e.g., Facebook, Instagram)
- online SNSs, decentralized and distributed computer networks where users communicate with each other through internet services
- networking SNSs, used primarily for non-social interpersonal communication (e.g., LinkedIn, a career- and employment-oriented site)
- social navigation SNSs, used primarily for helping users to find specific information or resources (e.g., Goodreads for books, Reddit)

5. Although in a recent interview, Wikipedia founder Jimmy Wales talked of the challenges with page editing by those with an agenda.

		Social presence/Media richness		
		Low	Medium	High
Self-presentation/ Self-disclosure	High	Blogs	Social networking sites (e.g. Facebook)	Virtual social worlds (e.g. Second Life)
	Low	Collaborative projects (e.g. Wikipedia)	Content communities (e.g. YouTube)	Virtual game worlds (e.g. World of Warcraft)

Classification of social media by social presence and self-presentation (Kaplan & Haenlein, 2020).

In his critical observation of the power of social media, Ian Bogost (2022) provides a useful history of its evolution. Data on current use is also found in this report from Pew Research.

Applications

We also refer to the "apps" that we use on our devices — downloading a new translation or mapping app when we travel, or a new real estate app when we're looking for a new place to live. Or we upgrade current apps or software on our laptops, such as word processing programs or the learning management system used by our universities. "Apps," also called application programs or software applications, are "computer program[s] designed to carry out a specific task other than one relating to the operation of the computer itself, typically to be used by end-users.... The other principal classifications of software are system software, relating to the operation of the computer, and utility software ('utilities'). Applications may be bundled with the computer and its system software or published separately and may be coded as proprietary, open-source, or projects." The software application on which you are reading this book is considered open-source — it is publicly accessible and its source code can be shared or modified.

As discussed in Truth #2, below, technology can also mean the range of devices we use to search and share electronic information, and for communications. We commonly think of our smartphones, laptops, tablets, and peripherals used along with their components (e.g, mice, monitors, speakers, microphones, headsets). But there is a wide range of device possibilities and mobilities.

#2. Our use of technology means different devices to accomplish different functions; or one device to accomplish many functions.

Our use of the internet and smartphones may seem so immediate that we can forget the purposes they serve for us. Communication is an obvious function. Just as we used landline telephones (first corded, then portable) to communicate in the past, our mobile phones enable communication with others at any time and place through voice, text, or video. Tech developers have also explored ways to make our communication more tactile, as in the haptic HugMe (Cha et al., 2008). Early mobile phones only provided ways to communicate; the smartphone revolutionized ICT by enabling touch screen access to the internet, a camera, and more.

Using devices for information is wider ranging, and we might consider types of information and subcategories. For example, while we might think of browsing the internet as an information function, using a device as a calculator or map may also be a form of gathering information (or is it a utility? Or a tool?). And some applications may offer a range of functions. Consider social media. For some, it might be a way of building social support; for others, it's also learning more about a topic; for still others, its support, learning, and entertainment. So while we might access multiple applications on a single device like a laptop or smartphone, that device might fulfill a wide range of functions for us.

> Try this exercise: take out your smartphone, and look at the various applications (or "apps"). Write down all the functions or jobs that your phone helps you perform. Remember, an app like Instagram isn't a function. Instagram might be used for entertainment, communication, or gathering information. Others use it for marketing and sales, or for education. It depends on the user. When you have your list of function categories, consider if there's anything else you do on or with your phone that could be considered a function. Read over your list. Does the list of different functions surprise you? What function does your phone NOT provide that you need other devices for?

In other cases, ICT can fill very specific functions. Photography purists may prefer a separate, handheld camera to take pictures or video. A Virtual Reality headset, whether stand-alone or tethered to a personal computer, allows the user to explore an alternative landscape. Even devices that have the capability to fulfill multiple functions may be used for specific purposes. Ratliff (2014) reported that, although the smartphone was the go-to device to fulfill a range of functions, multi-device users had a preference for devices depending on function. The laptop was used to perform "work," the tablet for entertainment, and the smartphone

largely for communication and social activity. (Personal note: the author was surprised to see a family member interacting with their phone, with their laptop open, while watching a movie with other family members. They reported the easy ability to multi-task and hold multiple foci, and agreed that each device held separate functional values.)

Now consider the family, and the various devices and functions ICT provides. How might ICT help family life? Let's translate the functions of technology into societal value, or standing in the way. What value would technology provide to the family? What challenges might it present?

Some examples:

- Communication between parent and child through texting while away at college can maintain a relationship.
- Opening a phone while eating dinner might be an intrusion. For others, it might be a way of sharing valuable information.
- During COVID, parents used computers to continue their work, as children continued participation in school. Jointly, they used videoconferencing technology to maintain connections with extended family.
- A new parent may search for available, affordable, and quality child care for his infant twins.

Now think beyond the traditional family, or the family best known to you. Consider families you read about in the news or relatives in distant countries. In the current conflict in Ukraine, for example, how might using cell phones fulfill valuable functions for families in the country or who have immigrated? Would seeing images of the destruction be useful or, for children using TikTok, create stress?

Understanding technology's range of functions, and our use of devices to fulfill those functions, can give us a basic way of conceptualizing the processes that contribute to individual, family, and societal outcomes.

#3. Our use of technology has changed dramatically over a short time.

Internet availability

At the beginning of the chapter, we discussed how technology and university life have changed in last 50 years. In fact, the efficiencies offered by ICT have really only existed since the web was introduced in 1991. As the internet became available, the rates of people accessing it and using it increased rapidly. Pew reports that in 1994, 18% of people used the internet. In 2021, that percentage was 93%, ranging from 99% of those 18–29 years old to 75% of those 65 and older. As a different metric, the current population of persons using web browsers is nearly 5 billion (4,878,428,571) — 62% of the world's population. Web 2.0 technology moved us

from one-way communication in web pages and email to interactive, collaborative, social tools with blogs, wikis, social networking, mobile/handheld devices, and more.

Shifts in behavior

As Lee and Cooper observe in Endgadget, since 2004 (the last 15–20 years), we've become able to:

- Hold the world in our hands via smartphones (which debuted in 2007).
- Capture everything through cameras on the phone. (This capability also added the word "selfie" to conventional dictionaries.)
- Effortlessly track our movements through smartwatches and other devices that send information about our health.
- Navigate maps on our phones
- Step into another world through Virtual Reality, and now Augmented Reality.
- See, listen, and play everything in seconds (through Netflix, Hulu and lots of other streaming services).
- Connect to everyone. Yes, social media like MySpace and Friendster existed before 2004, but it wasn't until Facebook entered the marketplace in 2006 that things really took off.
- Create anything (as long as it is small and plastic) using 3D printers.
- Use an affordable, mobile option for computing and for reading, thanks to tablets and e-readers with touchscreens.
- Speak, and have it done — through voice-activated assistants and smart speakers, and also through smart devices like doorbells, lights, and thermostats.
- Ask the world for patronage or support, with sites like Kickstarter making it easy to click a button and collect/donate funds.
- Share everything, like cab rides through an app that finds a driver for you.
- Drive electric cars.

The Endgadget article was produced in 2019. That's at least three years ago. Looking at the list to the left on advances, are there any new advances that you'd add?

The rapid advancement of information and communications technology in the last 20 years has also revolutionized our way of thinking and living. Beyond making life more efficient, the internet offers an additional environment for interaction and engagement. We can operate IRL (in real life) and virtually. As Alicia Blum-Ross describes it, the internet is like wallpaper; it always seems to be there. Our comfort with access to information and people anytime, anywhere can leave us feeling bewildered (FOMO?) when we're without service.

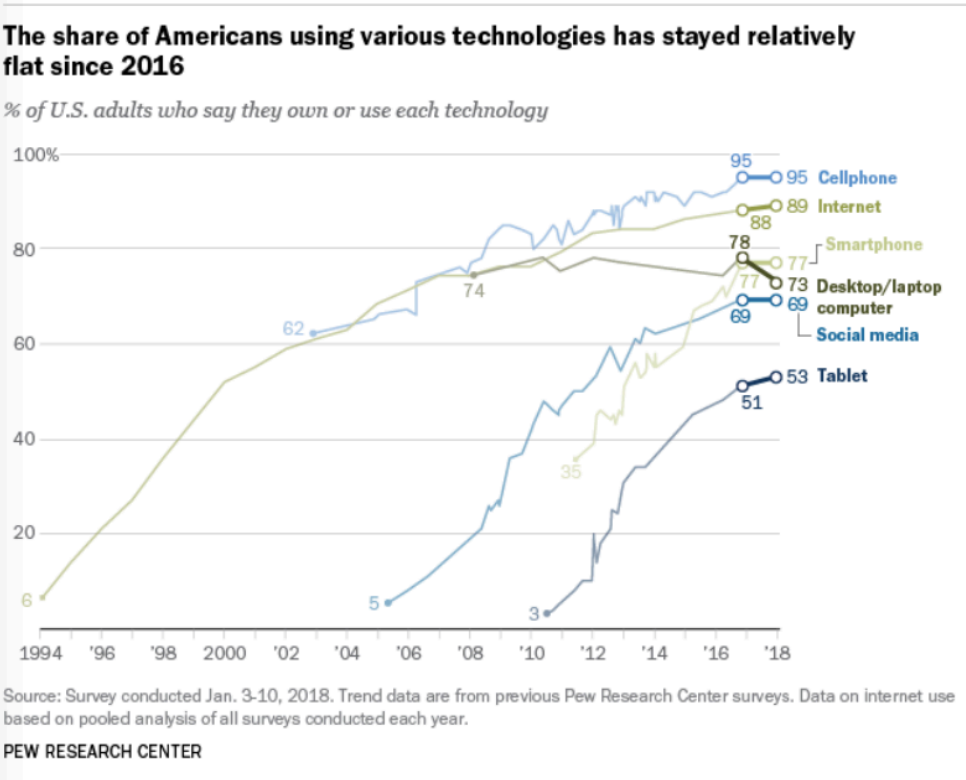
Visual Capitalist offers a slick graphic, below, of the history and rise in use of media. Early media, starting in the 15th century and going through the end of the 20th century, includes telephones, newspaper, and television. While these media can be used to spread information to the masses, they are also one-way, leaving the power of the content in the hands of the creator. The second wave — Connected Media — spans from 2000 to 2020, with the inclusion of the smartphone. Media is now two-way, and engagement is everything. Yet explosive use and easy access also means "fake news," censoring, and surveillance. The Data Media phase, which we are now in, offers access to primary data sources for information and the ability to verify. However, this can also mean "cherry picking" (selecting data to prove a point or to slant the narrative) and the temptation to falsify data. Looking ahead, we will see more creative and constructive ways to use data, and further de-centralization.

And there is much ahead. In 2021, reflecting on COVID-19, Brian Chen in the New York Times wrote about augmented reality for our shopping experiences, which will allow us to try things on or see what things look like in our homes before buying, and "hands-off" technology that will read our smartphones, making it unnecessary to access payment apps. He joins the ranks of technology futurists who predict our lives in decades, even just years to come.

Device ownership

Pew (Hitlin, 2018) reports on the rapid rise in technology use after 1994, noting that figures have plateaued since 2016. It is interesting that the desktop/laptop computer is the only technology showing a significant decline.

From the chart The Evolution of Media: Visualizing a Data-Driven Future, and your own observations, what challenges do you foresee in the future of data media?



Social media — growth and impact

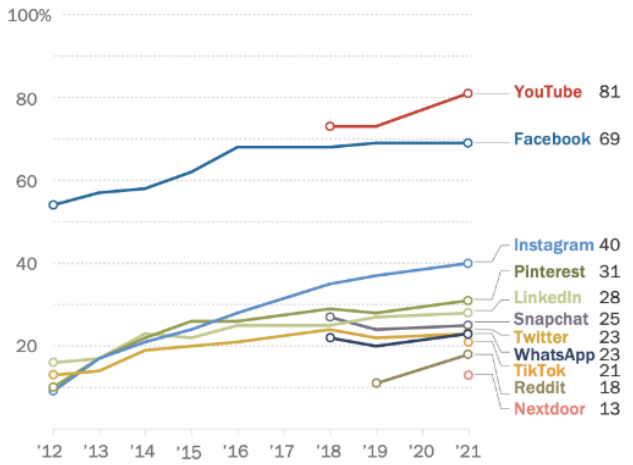
Pew Research (Auxier & Anderson, 2021) reported that, in 2021, approximately two-thirds of Americans used some kindof social media, and illustrated shifts in the use of various social media platforms, below Among teens, platform use is different (Vogels et al., 2022). TikTok, for example, is used by 67% of those ages 13–18, and Instagram by 62%, whereas Facebook consumption is much lower than general U.S. figures,

https://twitter.com/BrianRoemmele/status/1519128037920452608

used by only 32% of teens. As indicated by the figure below, use has increased over time for some platforms like Facebook and Instagram and remained relatively steady, such as with Twitter.

Growing share of Americans say they use YouTube; Facebook remains one of the most widely used online platforms among U.S. adults

% of U.S. adults who say they ever use ...



Note: Respondents who did not give an answer are not shown. Pre-2018 telephone poll data is not available for YouTube, Snapchat and WhatsApp; pre-2019 telephone poll data is not available for Reddit. Pre-2021 telephone poll data is not available for TikTok. Trend data is not available for Nextdoor.
Source: Survey of U.S. adults conducted Jan. 25-Feb. 8, 2021.
"Social Media Use in 2021"

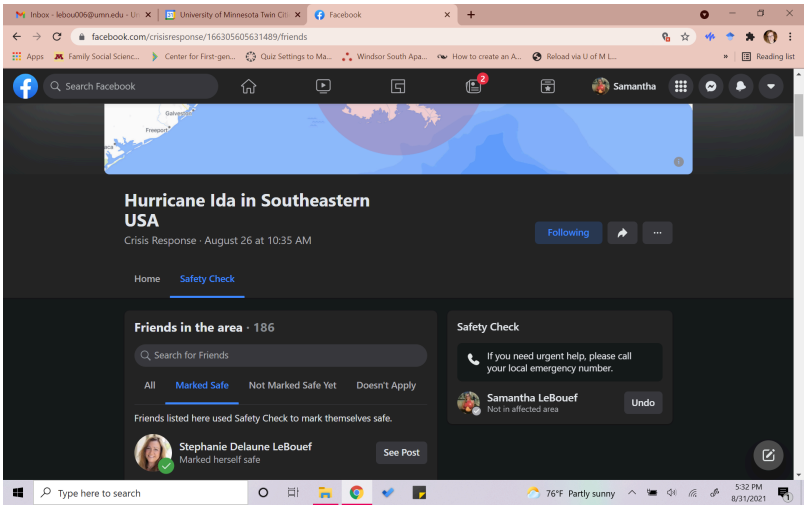
PEW RESEARCH CENTER

Beyond the power of the internet to invite interaction and engagement, social media enables us to quickly make social connections, expand the size and shape of our networks with others, and quickly share and receive information In Here Comes Everybody, Clay Shirky, an early writer on the power of social technologies, observes that social media holds the power to expand the size and shape of our social networks by connecting our more intimate social worlds with those of others. This diversifies our contacts, nd offers us access to a flow of information, and strengthens our social connections. This clip from the 2018 film Crazy Rich Asians depicts the speed of sharing information across social connections.

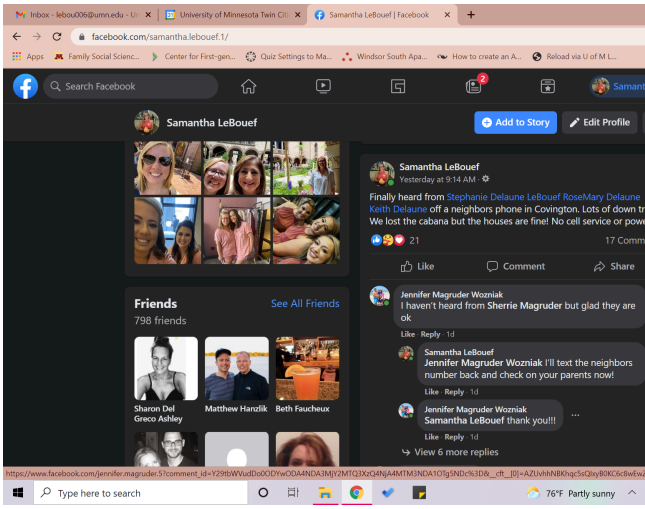
One aspect of information speed relates to news events. The author was in Washington D.C. on September 11, 2001. We first heard about the planes crashing into the towers, and then into the Pentagon, through radio and

television. For the rest of the day we were dependent on these sources — and on constantly refreshed news webpages — to get updated information. The delivery of news was slow and controlled by others. We had less personal involvement in it.

By 2013, the rapid spread of information from a news event — a shooting at the Washington Navy Yard on September 16 at 8:20 am— prompted within 30 minutes a public response through Tweets, Reddit posts, live video footage, "I'm fine" posts, crowdsourcing information to help with the investigation (quickly taken down), and a Facebook memorial page. This isn't surprising to us today. Events are live-streamed; Philando Castille's girlfriend, for example, posted a video on Facebook of his murder in 2016 as it happened. And when events are anticipated — like Hurricane Ida, which hit Louisiana in the fall of 2021, Facebook pages are set up in advance so victims can indicate their status.



Facebook page for Hurricane Ida by Samantha LeBeouf



Facebook page for Hurricane Ida by Samantha LeBeouf

What does it mean to have the ability to engage and share information so quickly? Consider this from a family perspective. What are the benefits? Might there be any consequences? When information spreads quickly there can be mistakes, which can get in the way of professional reporting and can breed a certain impatience. A colleague from Louisiana related that there was such an assumption that people would turn to Facebook during the hurricane, that people ignored the likely scenario of internet service being unavailable during the disaster.

Using social media data, new research is measuring the power of social connections on outcomes such as economic success (Chetty et al., 2022). Researchers are employing social capital data from over 21 billion Facebook "friendships" to determine social connectedness, social cohesion, and predictors of economic well-being. An advantage to the rise and steady use of social media lies with the volumes of data that, as in this case, can be used to infer social well-being. On the other hand, public sites like Facebook and Instagram are well-known for leaking personal information and exposing users to security breaches. For this reason, numerous sites provide recommendations on how to keep social media accounts safer (e.g., Kelly & Fowler, 2021).

#4. Our use of technology varies.

Although the numbers indicate that technology use is prolific, within that data individuals vary in their access, use, skills, and attitudes. Consider the people you interact with regularly — your family, friends; at

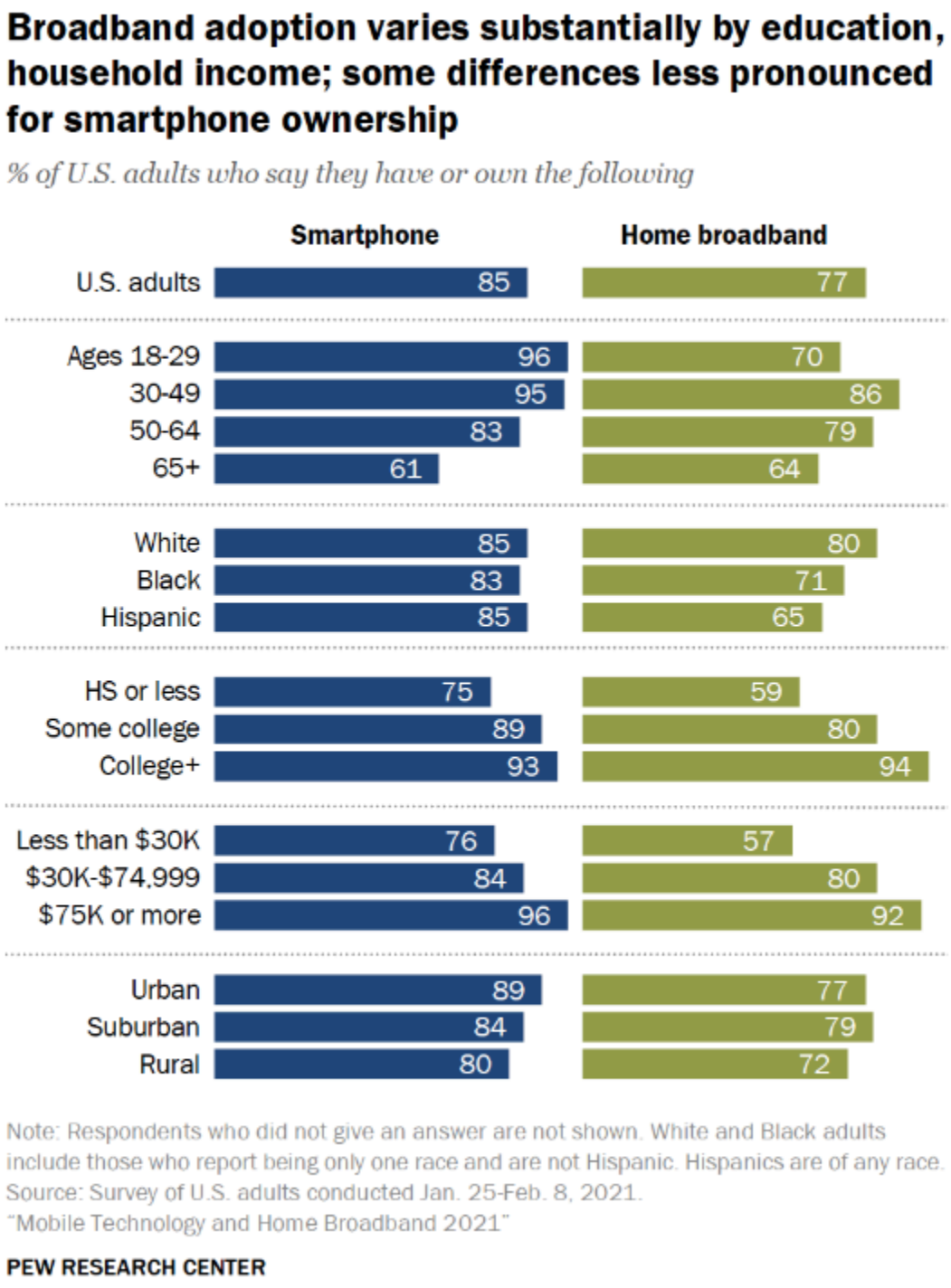
school, home, and work. It is very likely that you use social media apps differently than your parents, and that your parents use technology for work differently than you use it for school and work. Your younger sibling may be a "gamer," while you spend more time on your laptop writing papers for school. Your family home may be outfitted with smart speakers; your apartment may be lucky to get a strong wifi signal. You may use a multitude of devices, while your cousin in Ghana lives only on her smartphone.

Take a look at this interesting view of internet speeds around the world.

It matters that we understand differences in use. As we'll discuss in our next "truth," and more in Chapter 3, because ICTs are used for communication, differences in behavior can create disruptions in the flow of communication, which can lead to conflict. Because ICTs are used to find and share information, behavioral differences can affect relationships if, for example, personal information about one person is shared by another. And because people vary in their access to ICT, they vary in their ability to communicate, share and find information, and benefit (or be negatively affected) from the functions ICT enables. We've observed differences in technology use over time, and differences in which platforms are popular for social media use.

Demographics — broad factors used to characterize individuals in a population — are easy to access to describe differences in technology use. The chart below, from the Pew Research Center, illustrates differences in smartphone ownership and broadband use by age, race, education, income, and geography. Although overall numbers indicate that 85% of people have smartphones and 77% report broadband access at home, there are differences by groups. Fewer older Americans, those with less education and income, and those living in rural areas report both; more Whites than people of other races report broadband access.

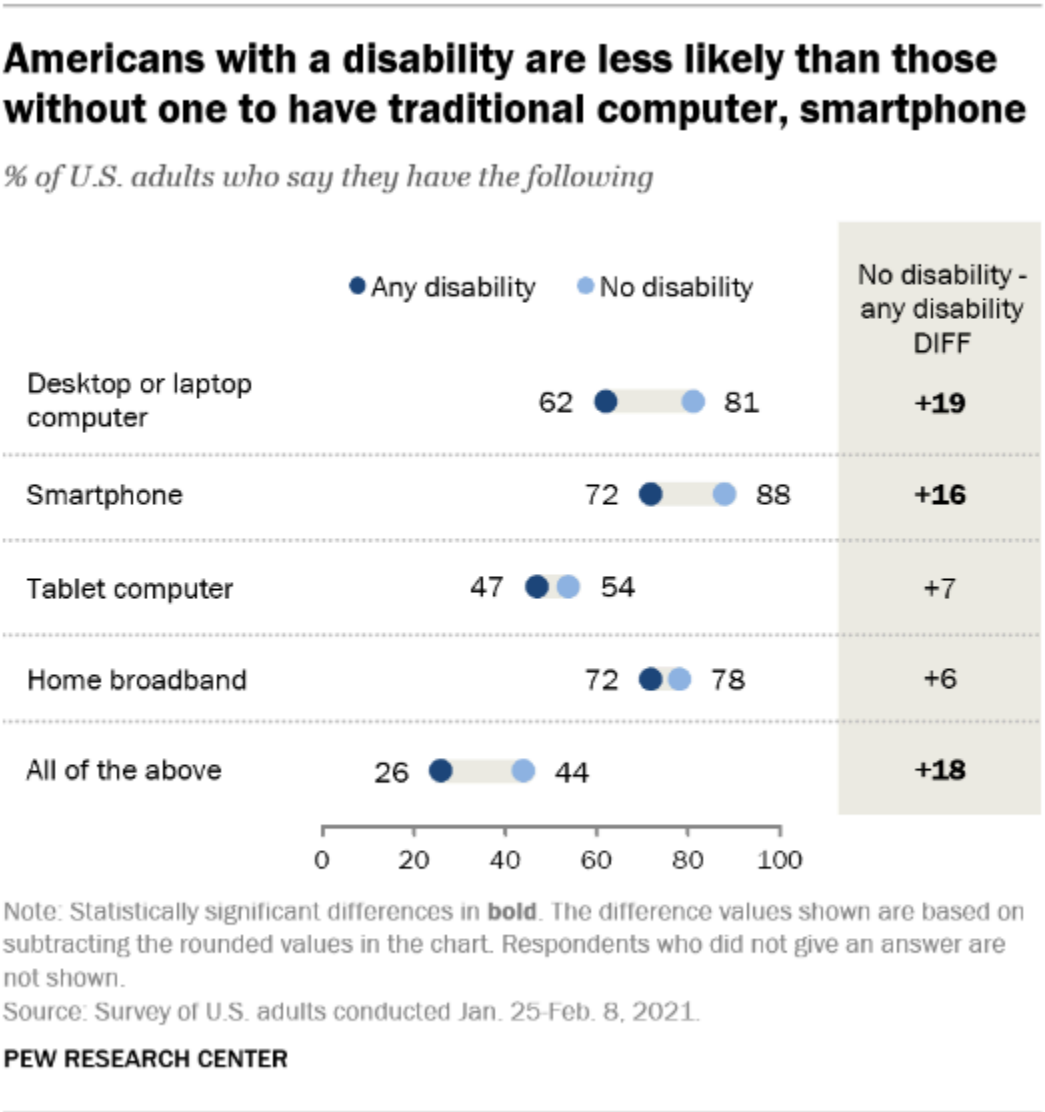
And naturally, individuals don't exist by a single characteristic. Often there are correlations between education and income; between education, income and geography; between race, education, income, and geography. (APA, 2017) So if we read that Hispanic women are less likely to have internet access, is that because they are Hispanic, or because they are likely to be in an income category that challenges their ability to purchase internet? Or because they are likely they live in a rural area that doesn't provide high-speed internet? Internet access isn't always tied to individual income; it is tied to economic infrastructures that make internet service available.



Demographic differences in smartphone ownership and home broadband

It's also possible that lack of internet access is due to preference. The Pew report observes that, while many of those without broadband access mention its cost or availability, others use their smartphones for the internet or simply prefer not to have it. Pew also reported that, in 2021, those with disabilities were less likely to have some devices, own multiple devices, and have access to broadband (Perrin & Atske, 2021).

Consider the chart above. How would you characterize the demographic characteristics of someone *least* likely to have access to the internet in their home? To have a smartphone?



US Adults' ICT ownership by disability status.

Technology use also varies by preference, attitude, and comfort. We've observed that social media has become more popular over the last decade among all age groups, though younger groups show the highest use, and that platform preferences have shifted. YouTube and Instagram are frequented more than Pinterest and Twitter. Consistent increases in social media use are also revealed across race, gender, education, income, and geographic location (e.g., rural, suburban, urban). Use differs little by race and gender, but slightly more by income and by education. Age differences may represent generational perspectives, which can reflect exposure to trends and to events that shape attitudes. For example, this piece discusses differences in perspectives of Millennials and Gen Z.

Within a group of "users," there are differences in behavior. Among Twitter account holders, there are clearly high- and low-volume consumers (McClain, et al., 2021), and portion of the high-volume users account for the majority of the content we read: "An analysis of tweets by this representative sample of U.S. adult Twitter users from June 12 to Sept. 12, 2021, finds that the most active 25% of U.S. adults on Twitter by tweet volume produced 97% of all tweets from these users." The report identifies differences in attitudes among users by volume, with those posting often feeling their political views influenced and more likely to experience harassment. Ironically, however, these users are less likely to view the atmosphere as a problem. We might consider those high-volume Twitter posters as a "type," and we wouldn't be alone. A significant line of research on internet and technology consumption analyzes the behavior and preferences of users (e.g., Blank, & Groselj, 2014; Borg & Smith, 2018). Why would this be of interest?

#5. Variation in use and access can mean new sorts of divides.

With the COVID-19 pandemic requiring children to stay home from school, significant divides in access to technology had consequences on school attendance, participation, and learning. Even if schools loaned wifi hubs, Chromebooks, or other devices that enabled children to attend school at a distance, their homes were not necessarily equipped with internet access. Those families with devices may have had to share a single screen. And if parents were working from home, priority may have gone to adult employment over children's engagement in classes. In Chapter 3 we'll explore more about access differences in the U.S. and around the world. As an example of global differences in technology access and children's learning, Ayllon et al (2021) show high European Union country variation by households without access to a computer and households without access to the internet during COVID-19.

Variations in access can also mean variations in "readiness." Those with less ability to use technology become less skilled and comfortable and may develop attitudes that lean toward not using it, or not using particular applications (think, for example, of a grandparent's interest in joining Instagram). In 2016 Pew identified a "readiness gap: among internet users (Horrigan, 2016). As we can see in Figure 5, below, there are

demographic differences in those who are "unprepared" and those who are "ready," with correlations once again to income, education, and age.

Digital readiness: The five groups along a spectrum from least ready to most ready

% of U.S. adults in each group

			MORE LIKELY TO HAVE THESE CHARACTERISTICS
Relatively hesitant 52%	14%	**The Unprepared** They have relatively lower levels of tech adoption and do not use the internet for learning, need help setting up new tech devices, and are not familiar with "ed tech" terms. The Unprepared do not have confidence in their computer skills and are not sure they can find trustworthy information online.	Women Ages 50 and older Lower income households Lower levels of formal education
	5%	**Traditional Learners** They are active learners and have technology, but are not as likely to use the internet for pursuing learning and have concerns about whether to trust online information.	Women Minorities Age: 50 and older Lower income households
	33%	**The Reluctant** They have higher levels of digital skills than The Unprepared, but they have low levels of awareness of new education technology concepts. This translates into relatively low use of the internet for learning.	Men Age: 50 and older Lower income households Lower levels of formal education
Relatively more prepared 48%	31%	**Cautious Clickers** They have high levels of tech ownership as well as confidence in their online skills and abilities to find trustworthy information. But they are less familiar with online learning terms and less apt than the Digitally Ready to use online tools for learning.	Higher income households Some college experience Age: In their 30s and 40s
	17%	**Digitally Ready** They are ardent learners for personal enrichment. They have technology and are confident about their digital skills and abilities to find trustworthy online information. They also know the most about online learning resources.	Higher income households Higher education level Age: In their 30s and 40s

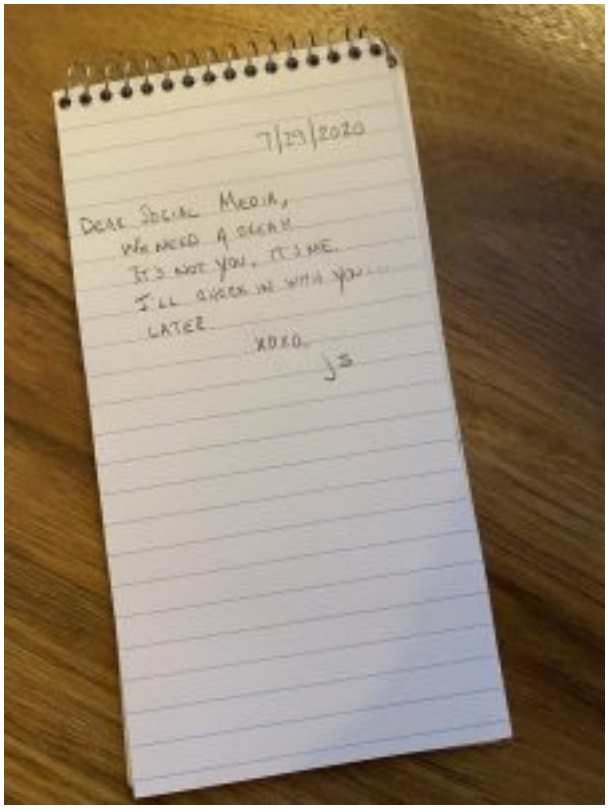
Source: Survey conducted Oct. 13-Nov. 15, 2015.
"Digital Readiness Gaps"

PEW RESEARCH CENTER

Differences in access can also mean divides in who influences others' behavior. One example is political values and voting behavior. This interactive chart reveals shifts in ideologically political values and partisanship from 1994 to 2017. We can correlate this shift with the growth in ICT availability and use of smartphones, which made access to social media easier. And social media has the power to influence global politics, like the May

2022 presidential election in the Philippines. Politics isn't the only thing influencing those who actively use social media; "Grandfluencers" on TikTok, for example, are attempting to shift our perceptions of aging.

#6. Our technology use presents a paradox: as it offers many benefits, it equally poses challenges.



Used with permission @janashortal

In 2005, Javenpaa and Lang's research on mobile technology experiences identified eight paradoxes in use:

1. **Empowerment / enslavement:** our access to information and others 24/7, yet exposure to those we'd rather not see, and our access to functions, which in turn encourages our availability.
2. **Independence / dependence:** use of our devices to make life easier, yet creates a dependence on those devices to make our lives easier.
3. **Fulfills needs / creates needs:** new technology provides valuable functions, yet it creates costs and needs for management.
4. **Competence / incompetence:** as people gain new skills in using technology, they also have another area of life in which to feel competent / incompetent.
5. **Planning / improvisation:** devices make planning more efficient, yet some users put less effort into planning, leaving it to an "app" and thus losing skills and leaning on improvisation.'
6. **Engaging / disengaging:** the ability to engage with others is enhanced, yet equal engagement across exposure is impossible, which leaves some connections "disengaged" (see "phubbing").
7. **Public / private:** technology enables private communication, yet it increasingly enters the public domain.
8. **Illusion / disillusion:** users believe that tech will make their lives easier, which is often true, yet they also can experience disillusionment when it doesn't work as well as they'd hoped.

We'll see these paradoxes and others played out in the many examples and research findings offered in this book. Future chapters will explore how technology can bring families together, while differences in use can also threaten understanding and closeness, challenging feelings of connectedness. Technology can aid children's creativity and learning, yet at the cost of introducing sedentary habits acquired through excessive

hours of screen time. It can offer adolescents opportunities to create important friendships, yet the public nature of these conversations can have damaging effects. An episode of This Hidden Brain, for example, features an interview with a young man who was accepted to a prestigious university. The university offered a Facebook group for incoming freshmen to help them get acquainted and feel connected to others when starting school. The group discussion included some rather "casual" language that encouraged users to be less cautious with what was said. For the young man interviewed, this included some racial slurs. Because the forum was moderated, admissions staff read and carefully considered the discussion, resulting in several of the students being un-invited. Many have experienced harsh lessons like this — though perhaps to lesser consequence — by taking advantage of the social media's connectivity benefits yet being reminded of the public, shareable, and viewable nature of the words.

Here are just a few more benefits and complementary consequences of our lives online:

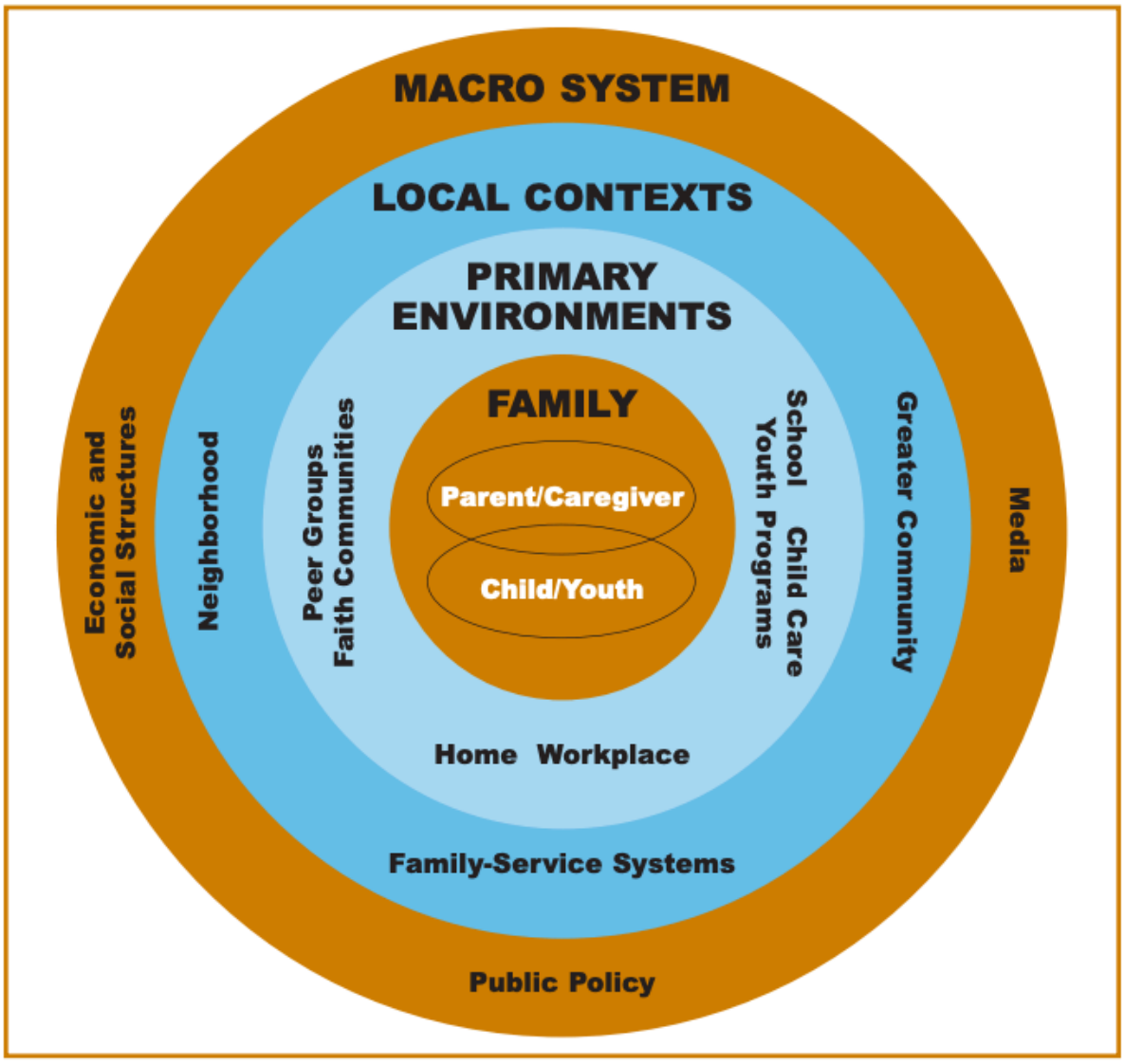
- Texting is an easy, mobile way to get and send information, YET the availability of our mobile phone numbers exposes us to "smishing" campaigns (AKA spam texts).
- Using smartphones is convenient, yet some phones can expose to unhealthy levels of radiation.
- Zoom is great for video conferencing with friends and family, for work, and for communication with professionals like doctors and therapists, yet over time, our energy gets drained from using this medium.
- Banking and shopping are incredibly convenient from the comfort of our couches, but essential information can be compromised, and we become a "data security" statistic.

#7. Our use of technology as individuals affects others; others affect our technology use.

Our information and communications technology is often referred to as "personal" technology — we use it as individuals for individual purposes. Yet given that the internet is a system of networked servers that allow users to easily share information, it is likely that our use can affect others, intentionally or unintentionally. We might also think about the settings in which we use personal technology. If you've ever been annoyed by someone having a loud conversation on their phone in a public place, you've been affected by another's "personal" use. And if you stray from taking lecture notes on your laptop and start shopping on Amazon during class, the students behind you may be distracted by your screen. If you find "spam" in your inbox, the sender has influenced your technology experience.

In the next chapter, we'll look more closely at a model of human development that contextualizes the settings and conditions in which human beings thrive as influences on their development. Urie Bronfenbrenner's bioecological perspective of human development (1995) identifies development as the result of individual biology in interaction with settings (including the people and events in them) over time. Those settings can be

both proximal and distal to us in location and interaction frequency. For example, those closest to us — our family and friends, people at our workplaces and our schools — are those we interact with often. And it isn't unusual for those settings to interact — when our parents and teachers meet, or when we carry stress from the workplace to our home-based relationships. And still wider or distal influences come from the institutions, government policies, cultures, and societies we are part of. They have an indirect influence on us, often through messages repeated by our nearby contacts. The model depicted below adapts Bronfenbrenner's classic framework perspective to include subsystems of the family, including parents and children, and contexts, including family service systems and government policies.



A neo-technological modification of this model by Navarro and Tudge (2022, discussed in Chapters 2 and 5) proposes the internet as an environment for interaction parallel to real life. We can imagine how a teen's cyber

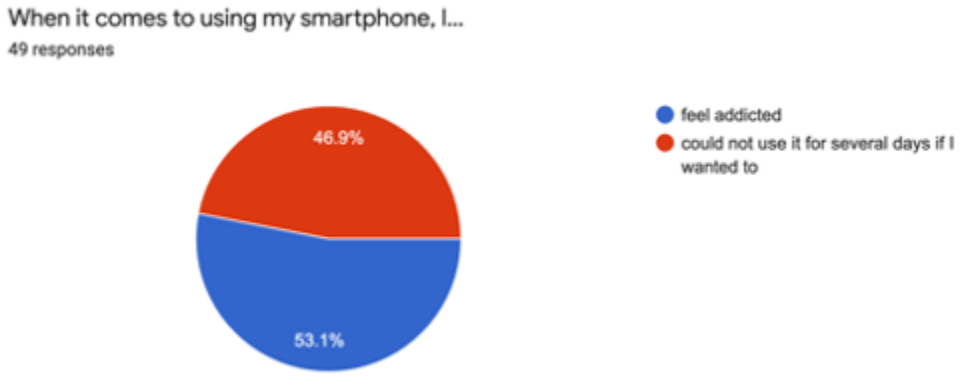
harassment experiences might result in feelings of stress and anxiety that others offline (like her family or friends at school) can see, respond to with support, or potentially exacerbate.

At a macro level, we appreciate the role that policies and regulations can have on our experiences with technology. As previously noted, data from our time online is easily shared, and our privacy and security can be compromised. One result is the creation of policies to protect users, particularly young ones. For example, the 2020 California Children's Privacy Act provides more stringent protections than COPPA (Children's Online Privacy Protection Act) related to notice and consent, children's rights, enforcement, and other items. It is similar to the General Data Protection Regulation (GDPR) in Europe. On the other hand, whole governments like China seize control of the internet to limit the extent to which individuals can post, and what they can see. In other words, these government censor the internet.

#8. The effects of technology can seem out of our control.

China's censorship is a perfect example of how individuals can feel that the effects of technology are out of their control. If we are limited in what we attempt to see and read, to post and participate in, we feel powerless in our engagement and thus in the effects we experience. We learn how TikTok algorithms determine the content we see. And news of the ways in which our data is not private when we interact with ICT can leave us feeling powerless. Recent examples include data tracking from baby monitors, Facebook revealing data on those seeking an abortion, and data pulled from a phone that led to a priest's resignation. Tufecki (2019) warns that algorithms and analysis from network data provide inferences about many things that are never disclosed, including individuals' sexual orientation and moods. She notes that apps as innocuous as those for weather updates were found to sell users' location data, which was used to make inferences ("What were you doing at a cancer clinic?").

Related to our list of paradoxes, above, although we can love using technology we can also feel addicted to it. Every semester students in FSOS 3105 are asked if they feel addicted to their smartphones. Here are the results from fall 2021 (which are quite similar to those from other semesters between 2017 and 2022).



Yet is our addiction the result of our own conscious behavior? As Tiku observes, ICT is programmed in ways that keep us interested and glued to it, generating FOMO (the fear of missing out). These methods include push notifications, pull-to-refresh, infinite scroll, autoplay, bright colors, streaks (or short-term goals), and gamification using points, a leaderboard, and rewards. Atler (2017) also investigates how applications are programmed to keep our attention, and observes that our attention span has decreased an average of 8 seconds since the introduction of iPhones. The website VirtualCapitalist.com identifies 33 ways that media can be a problem for its users.

With these industry-created, subconscious methods of encouraging us to keep using technology, and our data being used in ways we aren't aware of (despite the prevalence of pop-ups on websites asking us to "agree" on a privacy policy or use of cookies), it can feel like we're powerless. In large part, awareness can help (see Truth #10), as can action to keep our technology use limited and intentional. And we can advocate for stricter protections from the very people we pay to make our lives easier, and from our governments.

#9a. We are in the very early stages of understanding information technology's impacts on us as individuals and as a society.

#9b. Continual innovation in ICT will challenge our ability to do research that informs practice and policy.

During COVID-19, our initial months of quarantine were our best protection from the virus. We waited for a vaccine to protect us from contracting the disease. This meant waiting for the testing and approvals through the Food and Drug Administration. Even "fast-tracked," this process involves panels of experts reviewing research that shows evidence of product development and testing, clinical trials, testing for side effects,

effectiveness, and large-scale success. Part of that review is ensuring that the research was rigorous and followed a strict protocol, with conditions controlled so as not to introduce any confounding variables that would pose alternative explanations for the findings.

In the case of ICT, in most cases there isn't a treatment to eradicate a problem (though its applications can facilitate treatment). Instead, there is a range of products, including the internet as a virtual environment for information and communication interaction. Still, as with any product we use, we want to know that it is both safe and effective. Product testing of devices such as smartphones for radiation exists. Yet when it comes to the effects of using the products for communication, information gathering, sharing, and creating uses, and to our questions about their effectiveness and impact on aspects of human development, learning, and family life, we have moved to other realms of "knowing." There are many ways of "knowing." Jhangiani et al., in Research Methods in Psychology, identify these five:

- Intuition, or our "gut" response to an experience,
- Authority, or relying on the words of another, authoritative guide,
- Rationalism, or applying reason and logic to understanding a phenomenon,
- Empiricism, or making an observation from experience, and
- The Scientific Method, or "the process of systematically collecting and evaluating evidence to test ideas and answer questions."

Consider what you "know" about the safety and effectiveness of using a smartphone. Or what we "know" about teenagers feeling depressed from scrolling Instagram. And how we know it. Is our knowledge based on personal experience or observations, or from reading a compilation of research findings? Did the research include users like YOU? Was the research on adolescents short-term, measuring depression at a single point in time, or did it follow them to see if the symptoms changed?

The challenge with the relative novelty of information and communications technology is that we're still in the early stages of using the devices and applications. And with major events like COVID-19, we're using them under ever-changing circumstances. As Martha Pickerell observed in 2015, and which still rings true to an extent,

> *There is no reliable evidence yet of long-term risks from overexposure to screens. The current guidelines for kids' use of screen media are based on decades of research into kids' TV habits and the related outcomes: poorer performance in reading and language arts, lower attention span, and higher risk of obesity among kids who watched excessively.*

We have more research on the effect of screen exposure — both the quality of exposure and the quantity of time — on children at different ages in different sets of conditions, but it's not longitudinal, and doesn't have the volume of the research on TV viewing, which had a good 40–50 years before the advent of personal computers, tablets, and mobile devices.

Look at the two images below, of children viewing a television (left) and a computer (right). Can we apply what we know about television viewing to our use of modern ICT? Think about the differences between viewing a TV screen and interacting with a computer; one with internet access and that runs a range of software. Would research on their impacts by the same? How would it be different? Changes in television — in size, color display, and content offerings — haven't been at the speed of changes in our mobile devices, applications, algorithms, and internet capabilities. The research-to-publication pipeline moves relatively slowly for all the points of rigor along the way. Yet in that time, what we use and how we use it can change dramatically. Colleagues of the author gathered data on parents' interactions on discussion forums, which became outmoded when social media took over.

In the meantime....

"Watching TV" by oddharmonic is licensed under CC BY-SA 2.0.

"Children using the library computers." by San José Public Library is licensed under CC BY-SA 2.0.

#10. Our "intentional" use is a way for ICT to be both safe and effective for us and in our responsibility to others.

While we may be the guinea pigs in using ICT, and subject to the ongoing findings of researchers, we accept that our use brings certain benefits and that we will remain open to understanding the risks. Parents report that it's harder to parent today than ever before, and technology is the reason cited by most (Auxier et al., 2020). Yet they don't forbid their children, or themselves, from using it. They practice ways of knowing, whether through observation and action, trusting an authority figure, or open conversation with their children. danah boyd, ICT pioneer, philosopher, and parent (Tippet, 2017), remarked:

> I think that it's a tool. It's a vice for some. It's a way of connecting. There's all of these different layers to it. And we've had to think about how to be responsible in relationship to anything. If you think about it in terms of ancient religious texts, you think about gluttony, think about what is our relationship to food. We agree that food is a necessity, but what's the level in which it's acceptable? ... Like all of these other stimuli, though, we

> should step back and say, hey, **what is the relationship I want to have with people, with food, with substances, with the internet, with my environment?** And that's where I do think that there's a spiritual ask to all of this.

The idea of intentionality can seem very hard, particularly for Millennials and Generation Z'ers, who grew up with the internet, mobile devices, and social media. Yet we are all becoming aware of our reliance on smartphones — and of their possible impact on our personal, in-person conversations, of the feelings of being addicted to them, and of how we respond to the discomfort of feeling bored or impatient by giving in to the impulse to check for messages or scroll for updates.

We can practice what Michelle Drouin calls "social economizing," making active decisions about how we want to spend our time — alone, with others, on technology or not — and taking steps to realize our intentions. And we can check our security settings on streaming devices to reduce tracking when we watch Euphoria or the Bachelorette.

This is where family professionals come in. Not only are they researching technology's effects, but those on the front lines as educators and service providers help families get the information they need to make informed decisions — the reason for this book) And information about technology is best consumed with a critical eye — another reason for this book. As mentioned earlier, while our use can seem personal, it can have clear impacts on others. We can enjoy a new app, yet realize that it's sharing personal data in a way we find objectionable. Our use must be ethical and responsible, and seeing the complexity of our technology use as individuals, as family members, as professionals, and as a global society is key.

We can challenge technology innovators to be wise to the intended and unintended effects of their products. In her On Tech column in the New York Times, Shira Ovide cautioned against building new tech like augmented reality. While such technology can seem like a fun way to experience new places and adventures, we must consider other uses and pre-consider the possible risks. She asked about AR (augmented reality):

> What do we want from the next generation of immersive internet for our kids? Do we want to drive while our headgear flings tweets into our fields of vision? Do we even want to erase the gap between digital life and real life?

When we think about the future — and think beyond ourselves to our near and far communities — our technology use can become part of the common good. Several years ago, Kevin Kelly, a co-founder of Wired magazine, described the Amish community's interest in ICT. Well-known for their religious practices, which

For a recent discussion of how the Amish use ICT, take a look at this article from *Wired* magazine.

shun the use of electricity and other technologies, the Amish did not immediately dismiss the notion of cell phones. Rather, they deployed several of their younger members to use the phones for several weeks to test their purpose and the value they'd bring to the group. Their interest was to identify any potential value for the community.

Our awareness of technology's impact and use by families begins with our careful reflection on the ways in which we use technology in our own lives, how it affects our relationships and communication, how it enhances and detracts, and what it might mean in the future. This is a big ask — and I appreciate your joining me on this journey.

1.2 REFERENCES

Alter, A. (2017). Irresistible: The rise of addictive technology and the business of keeping us hooked. Penguin.

American Psychological Association. (2017). Ethnic and racial minorities and socioeconomic status. Retrieved from https://www.apa.org/pi/ses/resources/publications/factsheet-erm.pdf

Auxier, B., & Anderson, M. (2021). Social media use in 2021. Pew Research. https://www.pewresearch.org/internet/2021/04/07/social-media-use-in-2021/

Ayllón, S., Holmarsdottir, H.B. & Lado, S. (2021). Digitally deprived children in Europe. (DigiGen – working paper series No. 3). doi: 10.6084/m9.figshare.14339054

Blank, G., & Groselj, D. (2014). Dimensions of Internet use: Amount, variety, and types. *Information, Communication & Society, 17*(4), 417–435.

Bogost, I. (2022, November 10). The age of social media is ending. The Atlantic. https://www.theatlantic.com/technology/archive/2022/11/twitter-facebook-social-media-decline/672074/

Borg, K., & Smith, L. (2018). Digital inclusion and online behavior: Five typologies of Australian internet users. *Behavior & Information Technology, 37*(4), 367–380.

Brinberg, M., Ram, N., Yang, X., Cho, M. J., Sundar, S. S., Robinson, T. N., & Reeves, B. (2021). The idiosyncrasies of everyday digital lives: Using the Human Screenome Project to study user behavior on smartphones. *Computers in Human Behavior, 114*, 106570.

Bronfenbrenner, U. (1995). Developmental ecology through space and time: A future perspective. In P. E. Moen, G. H. Elder, Jr., & K. E. Lüscher (Eds.), *Examining lives in context: Perspectives on the ecology of human development* (pp. 619–647). American Psychological Association.

Carr, C.T., & Hayes, R.A. (2015). Social media: Defining, developing, and divining. *Atlantic Journal of Communication, 23,* 46–65.

Cha, J., Eid, M., Rahal, L., & El Saddik, A. (2008). HugMe: An interpersonal haptic communication system. In 2008 IEEE International Workshop on Haptic Audio visual Environments and Games (pp. 99–102).

Chetty, R., Jackson, M. O., Kuchler, T., Stroebel, J., Hendren, N., Fluegge, R. B., Gong, S., Gonzalez, F.,

Grondin, A., Jacob, M., Johnston, D., Koenen, M., Laguna-Muggenburg, E., Mudekereza, F., Rutter, T., Thor, N., Townsend, W., Zhang, R., Bailey, M., Barberá, P., ... Wernerfelt, N. (2022). Social capital I: measurement and associations with economic mobility. *Nature*, *608*(7921), 108–121. https://doi.org/10.1038/s41586-022-04996-4

Hitlin, P. (2018). Internet, social media use and device ownership in U.S. have plateaued after years of growth. Pew Research. https://www.pewresearch.org/fact-tank/2018/09/28/internet-social-media-use-and-device-ownership-in-u-s-have-plateaued-after-years-of-growth/

Horrigan, J. (2016). Digital Readiness Gaps. Pew Research. https://www.pewresearch.org/internet/2016/09/20/digital-readiness-gaps/

Jarvenpaa, S., & Lang, K. (2005). Managing the paradoxes of mobile technology. *Information Systems Management, 22*(4), 7–23. https://doi.org/ 10.1201/1078.10580530/45520.22.4.20050901/ 90026.2

Jhangiani, R.S., Chiang, I.A., Cuttler, C., & Leighton, D. (2019). *Research methods in psychology*. https://kpu.pressbooks.pub/psychmethods4e/

Kaplan, A.M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of social media. *Business Horizons 53*, 59–68.

Kelly, H., & Fowler, G. A. (2021). Privacy reset: A guide to the important settings you should change now. *Washington Post* (online). https://www.washingtonpost.com/technology/interactive/2021/privacy-settings-guide/

McClain, C., Widjaya, R., Rivero, G., & Smith, A. (2021). The behaviors and attitudes of U.S. adults on Twitter. Pew Research. https://www.pewresearch.org/internet/2021/11/15/the-behaviors-and-attitudes-of-u-s-adults-on-twitter/

National Human Services Assembly (2007). The parenting initiative: Investing in parents so children and youth succeed. *Policy Brief 22*. https://files.eric.ed.gov/fulltext/ED499303.pdf

Navarro, J. L., & Tudge, J. R. (2022). Technologizing Bronfenbrenner: Neo-ecological theory. *Current Psychology*, 1–17. Advance online publication. https://doi.org/10.1007/s12144-022-02738-3

Perrin, A., & Atske, S. (2021). Americans with disabilities less likely than those without to own digital devices. Pew Research. https://www.pewresearch.org/fact-tank/2021/09/10/americans-with-disabilities-less-likely-than-those-without-to-own-some-digital-devices/

Ratliff, C. (2014). More than 40 percent of online adults are multi-device users. E-consultancy. https://econsultancy.com/more-than-40-of-online-adults-are-multi-device-users-stats/#i.pdznn69qnfres2

Thelwall, M. (2009). Chapter 2 social network sites: Users and uses. Social Networking and the Web. *Advances in Computers*. Vol. 76. pp. 19–73. doi:10.1016/S0065-2458(09)01002-X. ISBN 9780123748119.

Tiku, N. (2018, April 18). The WIRED guide to internet addiction. *Wired*. https://www.wired.com/story/wired-guide-to-internet-addiction/

Tippet, K. (Host). (2017, July). danah boyd. The internet of the good the bad and the ugly. In *On Being*. American Public Media. https://onbeing.org/programs/danah-boyd-the-internet-of-the-good-the-bad-and-the-ugly-jul2017/#transcript

Tufekci, A. (2019, April 21). Think you're discreet online? Think again. *New York Times*. https://www.nytimes.com/2019/04/21/opinion/computational-inference.html

Vogels, E. A., Gelles-Watnick, R. & Massarat, N. (2022). Teens, social media and technology, 2022. Pew Research. https://www.pewresearch.org/internet/2022/08/10/teens-social-media-and-technology-2022/

Warschauer, M. (2004). *Technology and social inclusion*. The MIT Press.

1.3 LEARNING ACTIVITIES

A day (or more) without technology

Challenge yourself to put aside your phone, shut off your laptop, and ignore TikTok, Instagram, and Netflix. Zero technology for a full 24-hour period. If you need to, let your friends and family know you'll be off the grid. Go about your day and observe how you manage the various functions for which you use technology: navigation (e.g., maps), communication (e.g., texting), entertainment. How does it feel? Check your reactions periodically. Does it seem to get easier? Does your experience with life change? Do you feel in a bit of a panic at times? Use the experience to understand the role technology plays in your life and, at the end of it, whether you'd make any changes.

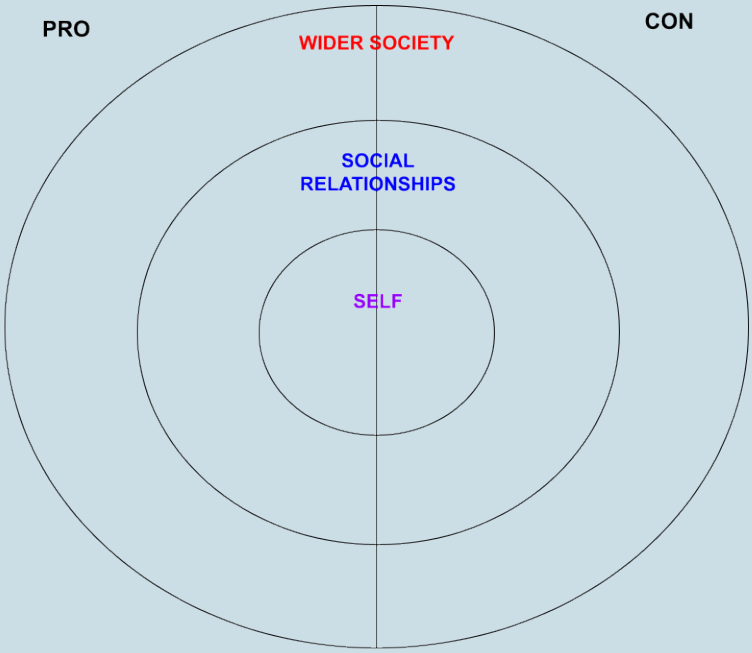
Debate: Technology and the college learning experience

The use of laptops, tablets, and smartphones in college classrooms has become the norm. Classes are increasingly being delivered via video conferencing, especially during the COVID pandemic. The use of technology has many benefits to learning, yet there are also potential drawbacks. There are faculty who strongly oppose laptops in the classroom.

Assume your university is proposing a ban on using laptops in a classroom. Divide into groups: YES (those agreeing with the ban) and NO (those opposing), and prepare points supporting your

stance. After sharing the main points on both sides, discuss what you've learned. Using the graphic below, with one side PRO and the other side CON, reflect on the use of laptops

- as individuals (pro/con).
- as groups (pro/con) — our use of technology is not inherently personal.
- as member of society — our use of technology is controlled and influenced by forces beyond us, including our households, our communities, our universities and employers, the larger society.
- What is the answer with regard to personal responsibility for our community's technology use?
- With regard to technology in general, what recommendations do you have as a class for its safe and effective use?



Measuring technology use

With a group of at least four people, discuss how you individually use technology. Identify the types of devices you own/use, the applications you use, the functions they serve for you, the people you connect with, and the ways in which you use ICT during a week.

1. Create a list of functions ICT provides to you. Match up the devices and applications that fulfill these functions.
2. Observe the ways that you as individuals vary in your use — the number and type of devices, frequency of use, comfort with use, functions or purposes, and so on.
3. As a group, design an instrument that would assess differences in technology use. What would you measure? How would you measure it?

The power of social media

This video is from the January 6 House Committee testimony of Stephen Ayres, given on July 12, 2022. Ayres protested at the Capitol on January 6, 2021, believing that the election had been stolen: https://www.nytimes.com/live/2022/07/12/us/jan-6-hearing-today-trump/29866d4b-e590-5573-b39a-535cf7f75f7c?smid=url-share

As you watch, you can see how Mr Ayres' was influenced by what he read on social media, only later deciding to "do his own research" to understand the realities of the 2020 presidential election. What is your reaction to watching this video? How might you convince someone like Stephen Ayres to expand his sources of information beyond what he reads on social media?

Your relationship with technology

Each of us spends many hours each day with our phones, laptops, the internet, streaming services, social media, and more. You might say that we spend more time with technology each day than we do with any human being. And even if we don't interact with technology, the fact that we carry our phones with us means that technology is "always with us." Reflect on your use of technology over the day, and on your connection, interaction, and even intimacy with it. We are, in effect, in a relationship with our technology.

Reflect on that relationship as though it was with a person. Is it a relationship that makes you happy? It is one that you feel dependent on? One that might be jealous if you also spend time with humans in real life, with nature, with a book? Is it a relationship that you feel you might be losing some control with? Or is it clearly a consensual, co-dependent, cooperative relationship?

Maybe write a letter to technology, expressing how you feel about it.

Being Good Ancestors

Jonas Salk, pioneer of the polio vaccine, stated that the most important thing we can do is to be good ancestors. He refers to intentional actions that are forward thinking, and to preparing a world for future generations. One element that surrounds us is 'smart cities.' Thinking about the inevitability of technology innovation, if we want to be good ancestors, what do you think information and communications technology should do? Or not do? How can it be safe? For individuals and for society? Develop a list of recommendations for ICT innovators that look ahead to future families and individuals.

1.4 BLOG PROMPTS

Listen to Lindy West's *This American Life* podcast segment on trolls ("If you don't have anything nice to say..."). What is it about posting online that allows individuals to feel comfortable with being rude and hurtful to others? Jimmy Kimmel has a popular segment on his late night show featuring celebrities reading the "mean tweets" they receive. Reflect on your own experience with social media.What is your reaction to Lindy West's story about the pain she felt when an anonymous person trashed her father's memory through online comments? Most of us don't have the opportunity to interact one-on-one with online trolls to the point that they come to understand their actions and apologize. What should we do when we receive negative comments from those who don't know us and use a fictitious identity? Do we turn away from social media altogether? Do we ignore it? Do we respond in some way?

During emergencies and other events (like weather), information travels quickly through social media. Consider the impact of this on us, pro and con. For perspective, consider events that happened before rapid social technology was available — 9/11, election news, natural disasters (like hurricanes), or threats of nuclear disaster (such as during the Cold War). What value is there to the speed of this information being shared? What are the consequences?

Kevin Kelly is a cofounder of *Wired* magazine and a philosopher about technology. Listen to his podcast interview on *On Being*, "The universe is a question," and reflect on his thoughts about how we view our ability to shape the character of technology.

In 2014, Pew Research published Digital Life in 2025. Scan through the report to read the hopeful and less hopeful predictions by experts. Reflect on our collective experiences during COVID-19 (obviously an event not known to these experts). Consider that 2025 is not that far in the future. How would you assess the predictions? Will they happen? Are they happening? What will or could they mean to family life? To society?

Listen to the podcast episode of *Hidden Brain* on the social media scandal at Harvard discussed in the chapter.What is your reaction to the response and to the ultimate decision related to a student's admission decision? Was it fair, given our current social media climate? Consider our class discussion about our individual use of technology and it's additional impacts on others, and how our use is heavily influenced by others' expectations of us.

Reflect on the ways in which your ICT use shifted (if at all) during COVID-19. For most of us, the time of quarantine between March 2020 and June 2021 had significant influence on our lives and our use of technology. What was good about this time, relative to your technology behavior? What are you not as happy with? From the perspective of the time in which you're reading this, did your shifts in technology use during COVID-19 continue?Here's an example. In May 2020, the author saw family educators post questions about integrating technology on Facebook. She offered to hold a Zoom session for people to gather and share ideas. The meetings were such a success that they have continued for well over two years, becoming a regular weekly meeting open to any family educator wanting to talk about practice. This is a simple change brought about by COVID-19 that has remained.

During COVID-19, many in-person classes shifted to videoconferencing (usually Zoom). Consider a traditional class, whether a lecture, a mixture of lecture and discussion, active learning, or laboratory work. Is videoconferencing a good substitute? Consider the effectiveness of

videoconferencing for learning, compared with in-person learning. What does videoconferencing instead of coming to class mean to you as a student? How does it affect your own use of technology, in classrooms and elsewhere, to support your learning? When is it efficient? When might it be costly due to its power to distract or to other negative impacts?

1.5 ADDITIONAL RESOURCES & READINGS

Staying Up to Date

- Pew Research: https://www.pewresearch.org/topic/internet-technology/
  - The chapter presents data from the Pew Research Center on internet, social media, and technology use in general. The link goes to the topic on Pew's site. Through this link, and their search function, you can find myriad reports related to the demographics of ICT.
- Top 20 Technology Magazines and Publications: https://blog.feedspot.com/technology_magazines/
  - This is a curated list of publications for up-to-date information about devices, applications, hardware and software, technology trends, and perspectives on use.
- The 50 Best Technology Blogs: https://detailed.com/tech-blogs/
  - Ranked algorithmically by mentions. A great complement to the publication list above (some entries appearing on both lists). More current writing on technology and the internet in our lives. Personal favorite: Mashable.
- Quiz yourself Technology Awareness (self-quiz): http://technologyawareness.org/take-the-quiz/
- Cybersecurity quiz (Federal Trade Commission) : https://www.ftc.gov/business-guidance/small-businesses/cybersecurity/quiz/basics

Additional Reading

- Information Technology and the US Workforce: Where do we go from here? (2017 report by the National Academies of Science)
- US Census (2021). Computer and internet use in U.S. households, 2018.

Principles and Ethics

- Hira, T.K. (1996). Ethics: Personal and professional implications. *Journal of Family and Consumer Sciences, 88*(1), 6–9.

CHAPTER 2: WAYS OF UNDERSTANDING FAMILIES AND TECHNOLOGY

2.1 WAYS OF UNDERSTANDING FAMILIES AND TECHNOLOGY

Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less.

—— Marie Curie

Chapter Insights

- "Family" can be defined in various ways; there are generally accepted roles and functions families fulfill for their members and to society.
- As the family operates as a system, there are characteristics, processes, and influences on its functioning.
- Extant theories of the family — including family development, symbolic interaction, feminist and social construction — are useful in understanding dynamics of technology use and family access.
- While theories of media use help us understand how people vary in their use in relationships, they might be insufficient to apply to family research without some adaptation.
- This chapter presents Lanigan's Family Sociotechnological Framework, along with Hertlein and Blumer's Couple and Family Technology and Life Course. Consider how these frameworks characterize the role of technology in family dynamics and functioning.
- With evolving research and theory, our consideration of families' integration of technology and its impact on family life might drive new ways of understanding families altogether.
- After reading this chapter, identify what you feel inspired by, the questions that remain for you, and the steps you can take for your own technology use to be more intentional.

As family scholars, when we address questions of the impacts of technology use on family life, we begin with the foundation of how the family is understood, its processes, the dynamics of relationships between family members, and how the family is situated within the wider social ecology. On this foundation we can more clearly see ICT is used by families for communication and family life management. ICT enables a variety of processes between individuals in the family, and on behalf of the family, helping achieve the functions of the family. This chapter reviews key family theories and perspectives, and presents newer theories specific to technology use. The chapter ends with a discussion of two relevant models that blend traditional family constructs with the reality and potential of family internet, device, and application use.

"far from home" by amira_a is licensed under CC BY 2.0.

Used with permission by the family.

H_lira CC BY-SA

Consider these questions about your own family:

- How do you define "family"? What influences how you view and define "family?" What is a "happy family?
- What are the functions or purposes of a/your "family"? Who are its members? What roles do they play?
- Is your family "successful" as a family? Effective? Healthy/functioning?
- What influences your family's well-being — positively and negatively, internally and externally?
- How has your family changed over time?

Defining Family

The definition of family depends on the perspective of the person doing the defining. Some consider a family

to consist of members who are legally and biologically related. Governments define the construct of a family when distributing goods or services, or when allocating rights and privileges. The U.S. Census Bureau, for example, defines family as "a group of two people or more (one of whom is the householder) related by birth, marriage, or adoption and residing together; all such people (including related subfamily members) are considered as members of one family." [NOTE: "householder" by virtue of a name being on a title or lease agreement]. This definition is broader than the same agency's definition of a family group and family household, which can include nonbiological others and ascribes leadership. Family is sometimes defined by its structure and membership. While some may restrict this to a traditional notion of "immediate family members," including the parent or parents and children, others consider anyone living with and related to the immediate family., including grandparents and other extended family members. And for others, "family" is a concept borne of connectedness, similarity, and shared values: two or more people who are committed to each other and share intimacy, resources, decision-making responsibilities, and values.

For the purposes of our discussion of technology use, if we are to have a generalized sense of technology's influence, it is important that definitions of families are shared across research when comparing studies.

"family" is a concept borne of connectedness, similarity, and shared values: two or more people who are committed to each other and share intimacy, resources, decision-making responsibilities, and values.

With an understanding of what a family might look like, let's consider its function. This can seem like an odd question when we all were born into families and are part of families, even if they've changed in composition or meaning over the years. The family is such an expected, natural unit of society that to question its function can seem jarring, yet the question allows us to better understand the processes and structures that help the family to be successful — processes and structures that are facilitated or affected by ICT.

"Spoons" by Yelnoc is licensed under CC BY-NC-SA 2.0.

Families serve functions to themselves as a cohesive unit, to their members, and to society (including culture). For example, the definition above indicates process words: "commitment," "sharing" — yet to what end? Perhaps the function that nearly everyone can relate to is the family as providing emotional support, and caring for the physical, mental, social, and (for some) spiritual well-being of its members. Families also perform generative functions for society. In fact, birthing into a family unit and socialization of children is a role most cultures confer on families. In so doing, families provide a value system

of beliefs that are passed through generations, maintaining members' emotional, social, physical, and spiritual well-being.

Readers are encouraged to explore the rich cultural and ethnic dynamics through which families are guided in their norms, traditions, roles, and expectations (e.g., Gardiner, 2017). It is through these caregiving functions and the passing along of traditions that family well-being becomes of interest as an economic value.

As noted by the World Youth Alliance:

> The family facilitates the transfer of culture from the older generation to the younger generation, passing on values and the importance of hard work, discipline, and solidarity. The strong examples set by parents, grandparents, and extended family members foster the work ethic and moral character of individuals entering into the workforce, which positively impacts the quality of the workforce and reduces youth unemployment. Thus the important role of healthy family structures in the economic growth of society must be recognized and promoted.

This section reviews several conceptual frameworks common to family science. Those selected neither exhaust the list of family theories, nor are they "best." They represent some classic family theoretical perspectives that align well to a shared understanding of technology's application to family structures, processes, and outcomes.

Beyond these, readers are encouraged to explore other theories such as feminist theory, valuable in viewing the lens through which society presents images and communication about women's roles, the subordination of women's roles, and gender equality and independence. Feminist theory might explore messaging through ICT, and global gender division in household property (including the possession and use of technology) and employment. Social exchange theory, when applied to the family, examines the goal orientation of individuals. It assumes that the individual acts in ways that satisfy goals, and that rational choices in pursuit of that goal consider the benefits and consequences, and size up available resources. With regard to the family, social exchange theory might be used to examine the influence of a family member in creating a crowdsourced fundraiser online, and the balance of perceived potential rewards and constraints (see related research by Kim et al., 2018).

Suggestions on further reading on family theory are offered in the Additional Readings and Resources for this chapter.

Family Systems and Ecological Influences on the Family

Viewing families as open systems, and families as part of a wider social ecology, are key principles in our basic understanding of family life. A Family Systems perspective builds from classic Systems Theory, which views the organism as an ongoing system of interconnected members. In an open system, members influence each other, and each member is influenced by external factors. The family systems perspective focuses on the family as an ongoing system of interconnected members. Extensions of family systems theory include Bowen's theory of the family and systemic change over generations of interactions and emotional development.

In the systems perspective, the whole is viewed as greater than the collective of individual parts. The family as a distinct unit has its own characteristics, structure, strengths, and weaknesses. The system is dynamic and transactional, sharing information (in the family via communication), and through that sharing affecting the other members, as family subsystems (e.g., a parent and child) or the family as a whole.

Olson's Circumplex Model (2003) features family operations through processes of **communication, cohesion, and adaptability or flexibility.** Communication takes many forms — verbal, nonverbal, symbolic, literal (e.g., text, written or spoken language), and figurative. And as with any communication from sender to receiver, articulation and interpretation may vary. Families also demonstrate aspects of cohesion. The cohesion of a system reflects its strength and degree of connectedness as a whole, and across its individual links (e.g., a parent-child subsystem). Connectedness reflects a balance of separateness (or autonomy of its members for growth) and togetherness for comfort, safety, and stimulation for growth. It is excessive neither in member separateness (indicating disengagement) nor member togetherness (reflecting enmeshment). Instead, it values demonstrations of commitment and closeness while respecting member individuality. Cohesion also reflects the strength and resilience of the family, particularly in the face of stress. As an example of technology research framed from a systems perspective, Ferguson and colleagues (2016) examined the influence of employee mobile technology use during time with the family. Enhanced mobile use contributed to work-family conflict and reduced work attention. For the spouse, increased mobile use by the employee (family member) contributed to spousal conflict and decreased commitment to the employee's organization.

As an open system, the family is able to take in new experiences, grow, and change. A closed system avoids change and maintains the status quo. All families and individuals in families face conflict, so another hallmark of healthy family functioning is flexibility — the ability to work through change and conflict and remain stable, albeit transformed. The strength of the unit is in how well it withstands, processes, and recovers from the stress or conflict. For example, if a family member comes out as gay, an open family system adopts a new understanding of that member on their terms and identity and adjusts. A closed family system rejects a non-traditional (to them) idea of the family member's sexual orientation. This rigidity is experienced through a lack of change in acceptance, a lack of communication, and a lack of openness to re-identify as a family.

Architect at work in home office. Permission-ShareAlike 4.0 International. Peter Theony

"An Amish family on a Morning Stroll" by johnny_appleseed1774 is licensed under CC BY 2.0.

Technology is another example of the need for system flexibility. A family system that is open embraces and understands the role that ICT plays and adopts it in ways that benefit yet don't diminish the family's functioning. A closed system stays resistant to using ICT; seeing it as not beneficial, and thus risking the lack of growth or efficiency. In the 2018 podcast interview referred to in the last chapter, Kevin Kelly speaks of the Amish, who selectively choose whether to embrace smartphones. They don't reject innovation out of hand, but rather ask some community members to experience the innovation for a year to determine if it benefits the whole community.

Flexibility can be also viewed as the necessary, day-to-day adjustments made when dealing with external influences small and large. Whether the conflict comes from a parent and child negotiating how much time the teen spends on their phone, or a family recovering from their home being hit by a hurricane, families need to possess the characteristic of flexibility. Flexibility may be seen in compassion, understanding, and communication between members. It may require shifts in structures and responsibilities, in the allocation of resources, and in the focus of time and attention.

As an open system, the family and its members are influenced by their ecology, or surroundings. Contexts can include systems that families are a part of — social systems, belief systems, and extended family systems. Social systems are the neighborhoods, workplaces, schools, and people that families and family members connect with on an ongoing basis. Belief systems relate to the family's norms, values, traditions, and possibly religious or spiritual elements that guide practice and goals. Extended family can also convey and reinforce culture and traditional norms and values, and can offer resources in the form of emotional, informational, and practical support — support that can be positive, yet can also have a negative impact (e.g., stress).

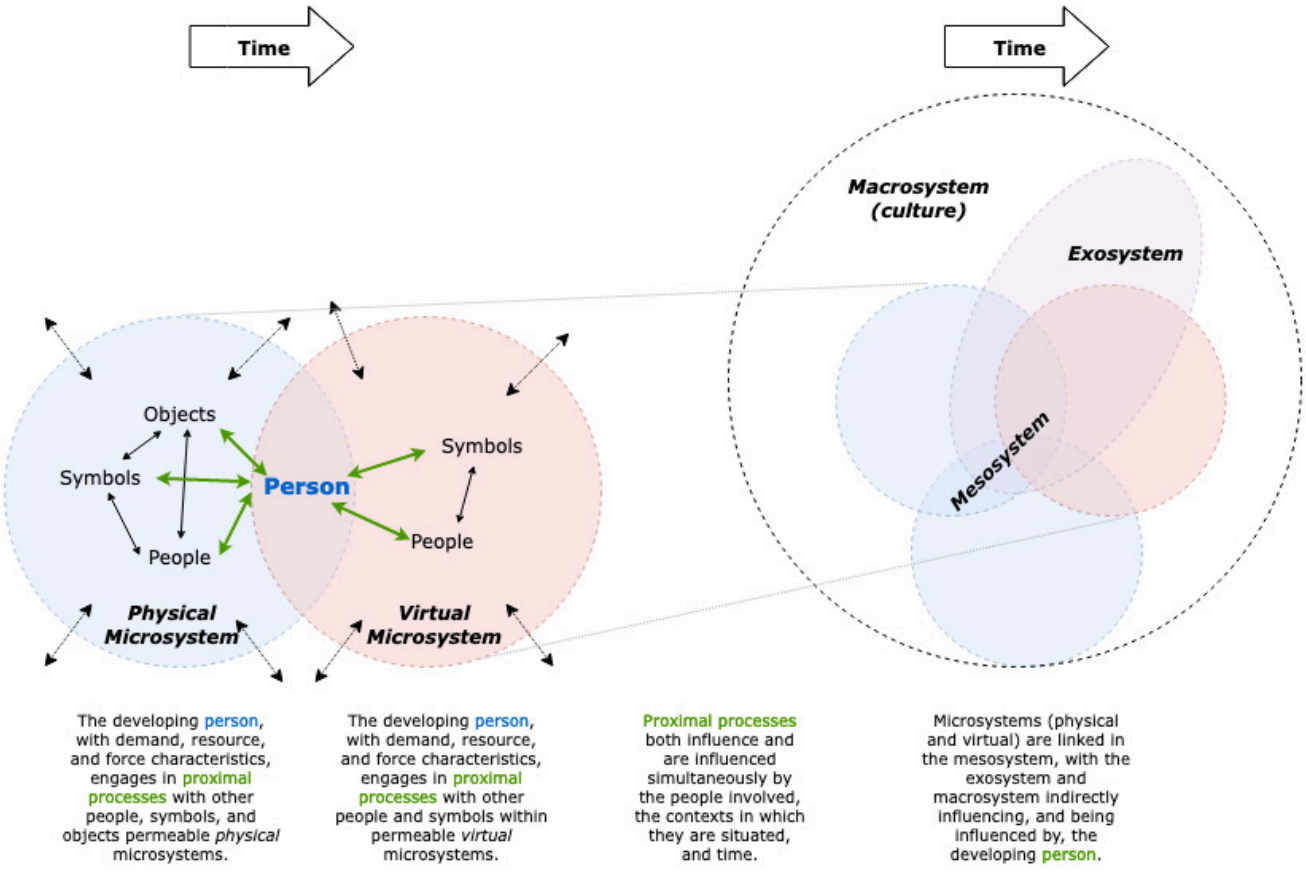
> Consider the use of ICT tools that facilitate family communication, yet might negatively affect the family's sense of cohesion and call for demonstration of flexibility. How might we envision these processes when there are individual differences in family members' technology use? We can also imagine technology as an external influence or milieu in which the family thrives, as there is a societal shift to a "high-tech," low-touch reality. How might this influence a family's functioning? In your family, what might the introduction of smartphones to the family mean to family functioning

Readers may want to dive into systems perspectives specific to family stress and coping (Hill, 1958; McCubbin & Patterson, 1982), family resilience, and family strengths (DeFrain & Assay, 2007; Patterson, 2004). While different, these models each reveal characteristics that help families through conflict and crisis. Hill's (1958) ABC-X model of family stress and coping, for instance, conceptualizes the family encountering the antecedents (A) of stress, responding based on their perception of resources (B), and experiencing the consequences (C). "X refers to the endogenous variable (X) of the ABC-X model as the degree to which the stressor precipitates a crisis to the extent that a family can no longer remain functioning" (Rossino, 2016, p. 1). The double ABC-X model refers to the family's post-crisis response and adaptation or dysfunction. Individual family differences dictate the perception, response to the stressor, and response to the consequences. As Patterson (2004) notes, family resilience can be viewed as an outcome and measure of family adjustment to stress. It can also be assessed as a process in terms of the meaning families ascribe to stress and the actions with which they respond. Family strengths reflect positive abilities and attitudes toward life and each other.

Families are also greatly influenced by the wider systems they are part of. As they are changed by that influence, they influence others within the family through their interactions. As the family is changed, its internal workings return it to a steady state, or homeostasis (much like the human body when subjected to abnormal conditions that produce stress, like running fast or metabolizing a high amount of sodium). Returning to Bronfenbrenner's ecological perspective introduced in the previous chapter, we are reminded of the individual as influenced by proximal (nearby, frequently interacting) influences and those more distal,

infrequent, and remote. Human development is influenced by the unique composition of the individual through interaction with people, in contexts, through processes over time. The family is a proximal influence on individual development, carrying the unique composition and characteristics of its members, history, and culture, and is influenced by the proximal and distal systems within which it interacts.

That unit can experience the same contextual influences as others, yet respond differently. These influences can include physical settings, time, events, political conditions, climate, and resources made available by location. Settings can influence the resources available to families, and threats to family well-being.

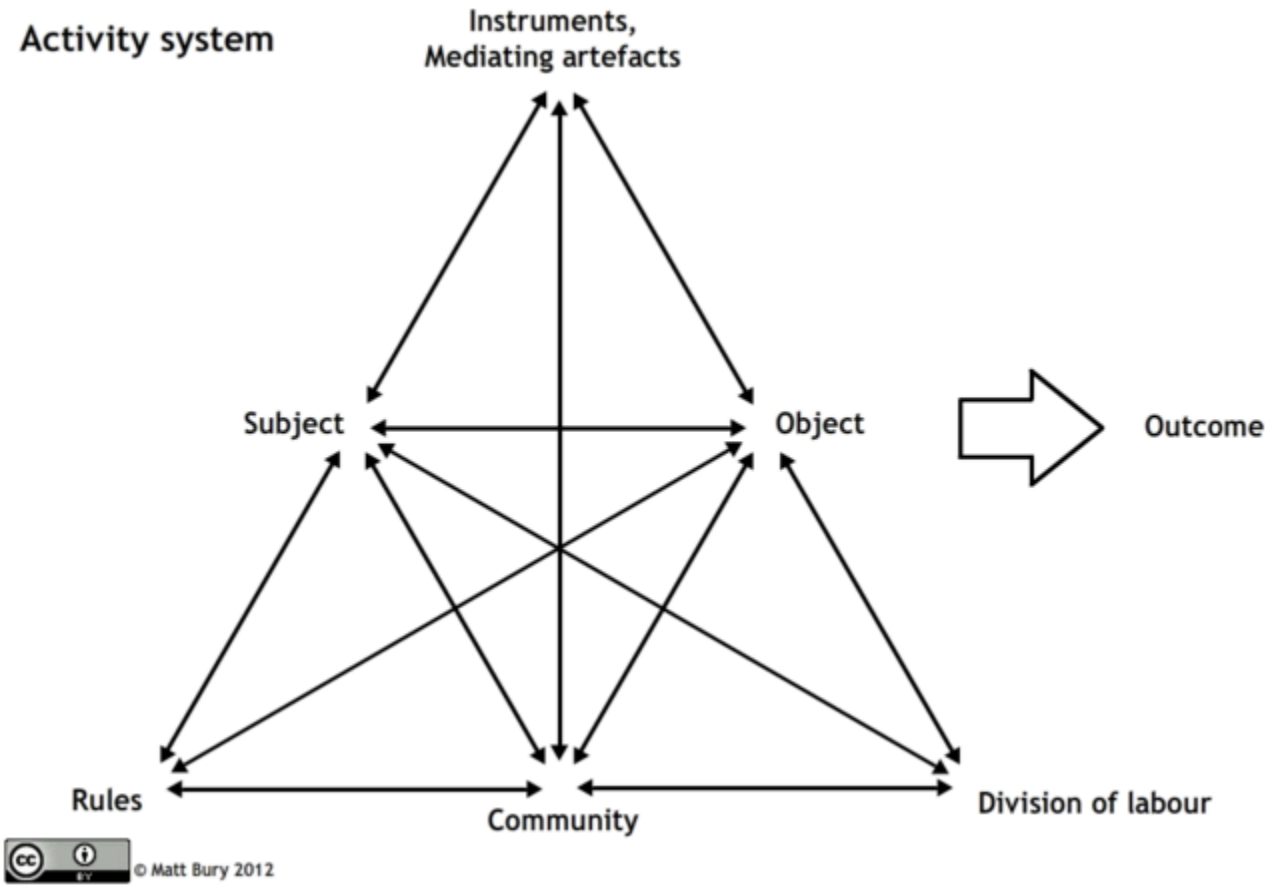


Visual Representation of the PPCT Model of Neoecological Theory (Navarro & Tudge, 2022)
(Figure adapted from Tudge, 2008 by Jonathan Tudge)

Used with permission.

Take, for instance, a family living in a suburb of a major metropolitan city and another living in a remote rural town. On one hand, all families living in a particular place are exposed to the same availability of resources. This is where jurisdiction matters. On the other hand, within that setting, family use of available resources will vary. Navarro and Tudge's (2022) "technologization" of Bronfenbrenner's framework identifies the

virtual environment as a setting complementary to yet separate from the physical world. The virtual environment offers a location for interaction and exposes the individual to resources. The authors adapt the notion of cultural influences in more distal settings, reflecting the virtual environment. As discussed in more detail in Chapter 5, which focuses on technology influences on human development, they observe that "the rapid adoption of digital technology likely differentially impacts the development of [individuals] depending upon the values and beliefs, resources, and social structure of their society." (Navarro & Tudge, 2022, p. 8). Events are another influence on the family as a system. As we've experienced with the COVID-19 pandemic, events can create worldwide impacts that have ramifications long after. The family is negatively impacted when subjected to influences of poverty, discrimination, and racism, which can reduce access to resources.



A perspective related to systems theory is activity theory, which articulates how social action is mediated through social objects and social organization, affecting thinking and behavior. Activity theory stems from the work of social cognition theorists like Vygotsky, helping explain the individual's mental capabilities resulting from interaction with the community, culture, and technology surrounding it. The theory's application to information and communications technology is apparent, yet it also considers others with whom the individual interacts within the system. Activity theory addresses the objective of the system, internalization of the actors, tools used by the actors, division of labor, rules, and conventions. One example

of activity theory as applied to technology and human interaction systems examines the use of online communities for professional development (Baran & Cagiltay, 2010).

Additional Perspectives on the Family

Family Development

Among the major natural and inevitable influences on the family are the individual development of its members, and the development of the family as a whole (Carter & McGoldrick, 1988). The family system is intended to foster the development of its members. There is certain predictability with the continual development and change of individuals in the family (e.g., children developing physically, cognitively, socially, and emotionally from birth through adolescence), though this still requires flexibility by the family. When the development of a member is impeded, that sense of predictability and order is thrown off.

As we consider development of the family and within the family, think about how family members deal with various roles and developmental tasks as they move through life stages: the initiation of couple relationships, commitment, and formation of the family; transitions to parenting; raising young, tween, and teenaged children; launching those children; and mid-life, retirement, and possible caregiving for elders. Within the family, one member's efficiency in completing the tasks of development directly impacts the development and activity of other family members. For example, a ten-year-old who is emotionally and cognitively mature may be given responsibility for caregiving to their younger siblings, making it easier for the parents to spend more time at work earning money that provides for the family as a whole. Viewing family development as a response to the developmental trajectory of its members encourages attention to the family process, acknowledges the family as a dynamic system, and focuses on individual and contextual change over time.

American Assn of Retired Persons. aarp.org/caregiving

This graphic from the American Association of Retired Persons (AARP) nicely demonstrates the developmental shifts that happen to whole families over time. As it shows, roles change over time. The full family unit of parents and child conveys the responsibilities of parenting and child-rearing. Thirty years later, the full family unit conveys the shift to older parents requiring some level of care by the adult child, even if that means emotional support rather than practical or financial assistance.

Given the multiple influences on individuals within the family, and the stages in which the family itself shifts, viewing change in a family acknowledges influences such as gender expression at each life stage; the health, addictions, and ability status of family members; immigration; and characteristics of race, ethnicity, and culture as carried out by the family, and as society reacts to those identities within the family.

Symbolic Interaction

Symbols offer shared meanings that are expressed through verbal and nonverbal communication. The Symbolic Interaction framework helps explain how we learn about and through roles by communicating with each other about various roles in our society. In families, repeated patterns and behaviors express roles and meaning to members and to wider social systems. While a role in a family includes expected behavior in a given social category (Olson et al., 2014), role making includes interacting with others in ways that help teach the role or change its expression. Women's caretaking, for example, may be learned from watching women in the family and extended family; these caretaking roles are reinforced by others in the family and wider society.

Emotional bonds are created from activities conveyed by one's role. Roles also symbolize the importance and power of a family member in fulfilling functions. The power results from an implicit negotiation between individuals in the family. Within an individual family, a woman's extreme caregiving may convey her power in that family (e.g., the matriarch).

Consider how roles may play out in family member technology use. A son whose role is in sibling oversight and monitoring, for example, may be given a mobile phone early to help him communicate with other family members.

Feminist Family Theory

Within the perspective of internal family roles in which members carry out functions that fulfill internal and external family goals, feminist theory challenges the patriarchal paradigm that proscribes certain roles to women (Allen, 2016). Traditionally women are viewed as caregivers, holding roles through marriage that serve the husband, bear children, provide the dominant role in parenting, complete domestic (household) management, and oversee care for elders. In the feminist framework, roles are equal and women maintain responsibility for financial matters and as decision makers for the family, including holding down employment. This doesn't mean taking on traditionally female and financial roles, but equal division of labor. Because this perspective challenges the traditional model, it also accepts a degree of conflict in households as a natural course of role negotiation. In this book, discussion of access to technology greatly concern views of women in global societies. There is significant misalignment in access to mobile devices and to the internet by gender, particularly in less developed countries in which fewer people hold access. For example, although in North America where 95% of the population has internet access, there is a 1% difference between men (95%) and women (94%), in South Asia, the difference is much wider with 37% men and 18% women. Feminist theory questions these access rate differentials.

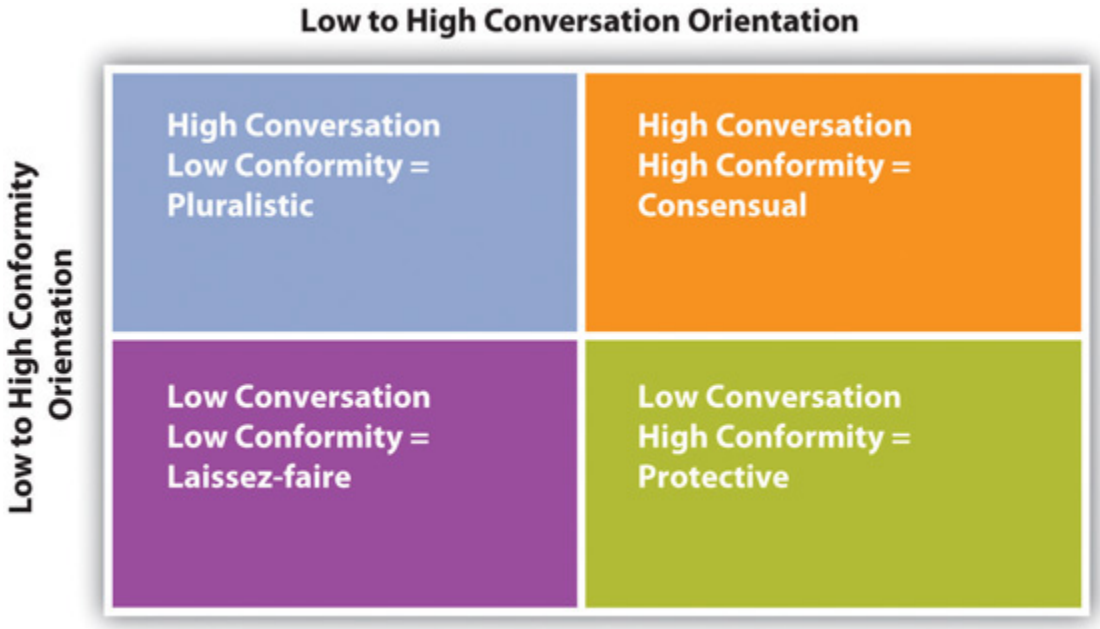
Patterns of Family Communication

As discussed, family communication is a process by which family outcomes of connectedness and cohesion occur. Interactions, and transactive communication, and the conveying of information through verbal and nonverbal actions — these are part of families' daily lives. Families also communicate care and affection through rituals and traditions. These may be unique to a given family (e.g., birthday, graduation) or may be a family celebration of a wider cultural tradition. Given the uniqueness of the family in society, and the uniqueness of each family, it makes sense that families vary based on their patterns of communication.

A social cognitive perspective on family communication is Keorner and Fitzpatrick's (2002) identification of patterns, which adapts relational cognition and interpersonal behavior. Their model of patterns identifies two dimensions that represent the family's shared reality: conversation and conformity. Conversation is communication about topics; conformity is expression of values, behaviors, norms, and beliefs. Families exhibiting low communication interact infrequently, and topics may be limited. Those who are low in conformity represent diverse perspectives and interdependence in interests. Information and influence from external sources are welcome in families who experience low conformity.

Koerner and Fitzpatrick's work describes climates created by families based on the two dimensions. Those high in conformity yet low in conversation may be protective; when both conformity and conversation are

low, the family is laissez-faire. Those high in conversation and low in conformity experience a pluralistic climate, and when both conversation and conformity are high, family patterns are said to be consensual.



Family Types Based on Conversation and Conformity Orientations – Communication in the Real World – CC BY-NC-SA 2.0

Social Construction

Social construction is the development of a belief, construct, or concept based on repeated interaction with the society around an idea. This interaction reinforces certain beliefs and understandings, developing identities over time and through life experiences. Consider how the family might be a social construction — a building up of certain beliefs about something — and the forces that influence those beliefs. Day-to-day interactions with others in our neighborhoods, workplaces, and schools convey information about families.

At a wider level is how the family is represented in the media, in books and literature and stories, and now as passed along by the internet and by social media.

Let's consider how the family has been presented in various television shows over time. Each link below describes a television show popular in its decade:

- In the 1960s (Father Knows Best)
- 1970s (The Brady Bunch)
- 1980s (The Cosby Show)
- 1990s (Full House)
- 2000s (Modern Family)
- 2010s (One Day at a Time (reimagining the series with a Latino family)

Here's a short overview of TV families since the 1950s.

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://open.lib.umn.edu/technologyfamily/?p=36#oembed-1

In each of these depictions, the family reflects a dominant belief system at the time — in the 1950s, the view of the family as patriarchal, white, and middle class; in the 1970s, the family as blended and heterosexual; in the 1980s, the Black upper-middle-class family of the Cosbys; in the 2000s, family systems made richly diverse (in some ways) through inclusion of age, ethnicity, sexual orientation, marriage, remarriage, and gay marriage. Certainly, real-life families vary greatly from these depictions, yet media representations convey the ways in which the larger society defines a family. Our critical lens must explore the voices and faces and experiences missing in these shared constructions. Often, the perspectives of women, immigrants, non-traditional families, families with members who have disabilities, and those with non-dominant gender orientation or cultural and religious traditions are silenced, marginalized, or — possibly worse — presented in a stereotyped way.

"Watch" by Yachi is licensed under CC BY-NC-ND 2.0.

Social construction as it relates to technology can be viewed as a response to technological determinism. Mauthner and Kazimierczak (2018) observe that technological determinism would argue that the changes brought about by technology create material constraints to human agency, and determine history and culture. They cite Heilbroner's (1994) view of the acquisitive mindset, or behavior of maximizing as the mechanism that facilitates technology's change and impact on history. Mauthner and Kazimierczak observe that technology is independent in driving social change, "but rather from the broader sociopolitical contexts in which they are designed, developed and adopted" (p.23) And so, the individual or community has less agency in the

changes brought about by technology. The authors cite Sismondo's (2010) illustration of the watch as an example of SCOT (the social construction of technology). The watch is crafted to be functional in its ability to tell time, to have esthetic value, to be profitable, to make a statement about the person who wears it, and other perspectives. Even the action of telling time can be perceived as fulfilling different functions – measuring a length of time, maintaining time, acting as a stop watch. In short, the perspective of the watch is socially constructed by those using it. In social constructivist notions of the family, the family is understood within the particular social contexts that define their nature and effects, technology too can be understood within social negotiations and logic. Mauthner and Kazimierczak provide an example of research that integrates social constructivism to technology use and family work balance through Wajcman's work on gender (p. 23). As will be discussed in chapter 9, technology integration in the balance of boundaries and role demands across work and family spheres is less determined by the mobile capabilities of devices and use of the internet, but through constructed action by users and the social contexts in which they operate.

Social Networks of Families

"Kok Sing and Natasha Extended Family" by Casual Chin is licensed under CC BY-NC 2.0.

Social network theory stems from the sociological study of human relationships and the flow of capital across social ties. Social networks are created by relationships, not defined by the boundaries and contents of an established institution. They are characterized by dyadic links and network dimensions (e.g., size, shape, density of interconnectedness), by relational transmissions across connections, and by time and space. They have power through their social and societal influence on individual behavior and the collective behavior of the group. Network structures determine the content, quality, and flow of influence within the network (bridging, bonding, latent social capital, social support). Influence can occur on a small scale (e.g., from person to person, from small group to individual); it can also happen across many interconnected network connections, creating an aggregate influence more potent than the individual connections within whole networks.

The perspective of Moncrieff Cochran (Cochran, 1990a, 1990b; Cochran & Niego, 2002; Cochran & Walker, 2005) on the social networks of parenting applies network theory to one role in the family, yet its principles make it relevant to other dimensions of family roles and influences through relationships. It suggests ways that the larger ecological, structural, and relational dynamics of a family member's life (in this case the parent) may impact child well-being, working through the parent or operating directly on the child.

Echoing the tenets of social network theory, Cochran and Brassard (1978) observed that it is through the structure of those connections and relational processes that networks have the capacity to convey information and models of behavior from the larger society through the parent, and thus to impact parenting behavior.

Network membership is greatly constrained, even imposed by one's position in society by virtue of such factors as culturalvalues and beliefs, income and education, and geographic location. Christakis and Fowler call this "situational inequality"(2009, p. 31). The other significant influence on network realities is the range of factors that motivate an individual's recruitment, selection, and engagement of network members. Identifying the forces that influence network formation and engagement illuminates avenues that public policy and programs can follow to affect network membership and involvement.

"3D Social Networking" by ccPixs.com is licensed under CC BY 2.0.

The social processes conveyed through network interaction — either directly involving the parent, or happening indirectly, as with hyperdyadic spread or broader network effects — contribute to observed parenting behavior. In general, social support through offers of practical assistance, information, and emotional or psychological aid has been studied as a process through which network influences parenting. Buffering, modeling, teaching, direct assistance, and providing opportunities for interaction are dimensions believed to affect parental behavior.

Internet and social media applications of Cochran's network perspective

Cochran's model is a useful conceptual guide for research on parents' social networks and on outcomes of parenting resulting from online and offline experiences. The framework challenges researchers to regard process and structure as keys to social relationship dynamics and meaning. Family researchers may look to

network perspectives to consider other dimensions of outcomes that may be the product of social network dynamics and that may have an influence on the child, including parent development and the parent-child relationship. As a mechanism for information, communication, self-expression, and collaboration, the internet holds possibilities to influence the individual development of the parent (e.g., identity validation). And explorations of impacts on the parent can examine how online interactions might have offline benefits either to parents directly, or indirectly to their children.

The use of social network sites might provide parents with bridging social capital (that exposes them to diverse child-rearing perspectives, including a blend of lay advice and professional views), and with bonding social capital to maintain close ties, even with those intimate, trusted, and depended on for social support yet infrequently seen.

Before moving ahead, consider some questions that apply technology to the family theories discussed in this section:

- How might the use of cell phones or smartphones figure into family system functioning?
- What might the introduction of smartphones to the family mean to family functioning regarding family member roles?
- How might "rules" related to technology play a part in the enactment of the roles?
- How does the sense of family member development relative to technology use, attitudes, or comfort figure into the family functioning for cohesion? Communication?
- To maintain the family functioning, how might family members need to demonstrate flexibility in technology use or attitudes?
- How is the family conveyed through social media in ways that point to it as a social construction?

Theoretical Perspectives on Media and Communication

Are family theories sufficient to answer our questions about technology use by families? What limits to exploring technology's impacts might be found in these traditional theories of family life? As will be discussed in the next section, specific perspectives on ICT present ways of understanding innovation in human life that are not adequately addressed in existing theories. While communications theories represent a field of study beyond the scope of this book, selected theories will be briefly introduced here as indicative of perspectives offered on ICT aspects and use, and on the impact of computer-mediated communication (CMC) on human behavior and collective society. Additional authors, such as Dworkin et al. (2018), have discussed these theories relative to their insight on families.

Media Richness Theory

Media richness theory proposes that media use or selection depends on the ability desired to convey messages, particularly those of an emotional or relational nature. As the figure below conveys, richness deepens with formats that approximate the experience of being face-to-face or physical presence. In Simpson's (2013) research on media richness, media selection is determined by considerations of tool or format experience, perception of tool capabilities, and social circumstances.

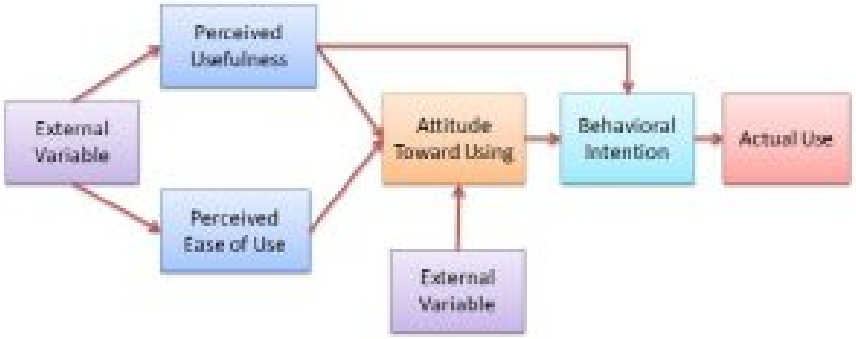
Media Multiplexity

Haythornthwaite's (2005) media multiplexity theory conveys the meaning of intimate relationships through the use of devices by number and variation. According to the theory, relationships are stronger when conveyed through the use of multiple devices and connections. Being friends with your sister on TikTok, texting her, IM-ing her through her Instagram account, and using FaceTime for weekly chats demonstrate the platforms used to maintain your relationship. Balayar and Langlais' research nicely represents media multiplexity in family relationships. They add the dimension of family perspective — individualistic or collectivistic — as this is an essential factor determining expectations for closeness. From a survey of college students, the authors revealed that those from collectivistic cultures appreciated face-to-face contact with parents, as it correlated with closeness and love. This did not hold for other family member relationships.

Technology Acceptance Model

The Technology Acceptance Model (TAM) (Davis, 1989) proposes that perceptions of technology as both

useful and easy to use have a direct and positive influence on technology attitudes, intention to use technology, and eventual use. (see Figure below)



Technology Acceptance Model – CC BY-NC 4.0

The TAM is derived from Ajzen's theory of reasoned action (Ajzen & Fishbein, 1980) which proposes that attitude toward a behavior is determined by the beliefs about the consequences of the behavior and by an individual's effective evaluation of the consequences. Among Family and Consumer Science teacher candidates (Ma & Pendergast, 2008), perceived ease of use was the most significant influence on intention to use technology. Limitations of the TAM, as Davis (1989) describes, are the inclusion but lack of specificity about external variables that influence attitudes directly, and the influence of external variables as mediated by attitude components, perceived ease of use, and perceived usefulness.

A Unified Theory of Acceptance and Use of Technology (UTAUT, Venkatesh et al., 2003) identifies attitudinal and contextual constructs that motivate use, including the perception of success (e.g., the technology is useful to the purpose), effort (e.g., the technology is easy to use), influence from the social context (e.g., encouragement of others), and facilitating conditions (e.g., the availability of training). Personal factors that may condition use include age and previous experience with technology.

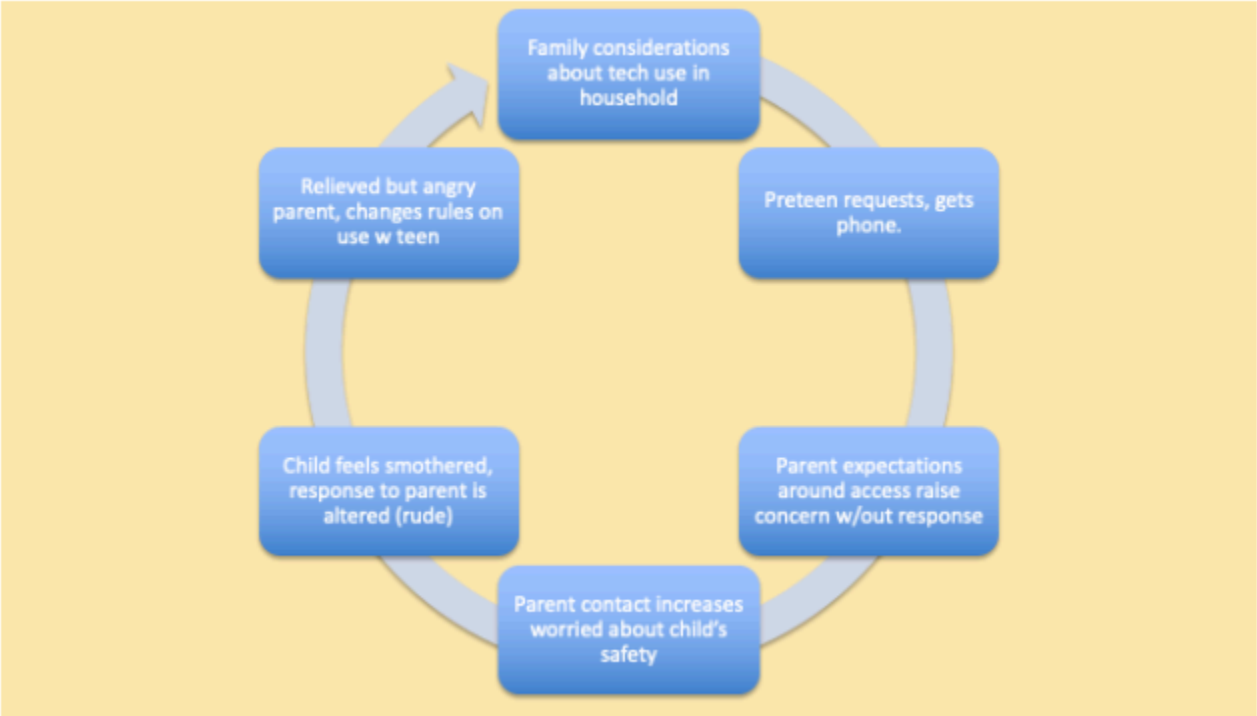
The author's repeated study with parenting and family education professionals employs Teo et al.'s (2008) model of context variables that influence the TAM (e.g., Walker, et al, 2021), discussed later in Chapter 11: subjective norms and facilitating conditions. Translated to the workplace, external TAM constructs are "workplace expectations" and "workplace infrastructure" — technology use by family professionals would be influenced by their acceptance attitudes about technology, whether those attitudes were shaped by workplace conditions of being encouraged to use technology, and being given the resources that help technology be easy to use and seen as useful. Ertmer's (1999) perspective on technology use also supports extrinsic factors such as training, access to devices, and organizational climate, yet sees them operate as "first order" influences, and views attitudes as second-order influences on use.

Frameworks on Families and Technology

Early in the millennium, advances in ICT use by families had family scholars calling for theoretical models that could shape evolving research and help depict and perhaps predict how new media impacted individuals within families and families as a dynamic, changing unit (Aponte, 2009; Blinn-Pike, 2009; Watt & White, 2000). Research using family theory as a basis for the study of technology integration certainly helps (e.g., Sharaievska & Stokolska, 2015). Recently, a variety of models have been proposed that integrate family dynamics with technological affordances and societal change (Dworkin et al., 2019; Mauthner, & Kazimierczak, 2018). This chapter focuses on two models that characterize family processes within traditional frameworks and that highlight aspects of the technologies themselves that inform selection, use, and impact.

Both models come from family systems and ecological perspectives; they regard ICT as tools external to the family unit that facilitate family processes (e.g., communication, knowledge acquisition) and structures that play out continuously in virtual and "real" worlds. The use of ICT by families is a recursive process in that changes in the technologies themselves can occur (witnessed by the growth in the availability of social and mobile media in response to popular use), resulting in differences in use due to the affordances provided. The recursive nature of ICT use is also seen in changes to family systems and processes as a result of the family interacting with and because of technology.

The figure below depicts changes in rules as a family experiences a member's technology use. The daughter wants a phone and is offered one with an implicit understanding that she will text her parents when she is away. When this doesn't happen, the discussion that ensues between the daughter and the parents results in a negotiation and a change in the rules to maintain family connectivity and balance.



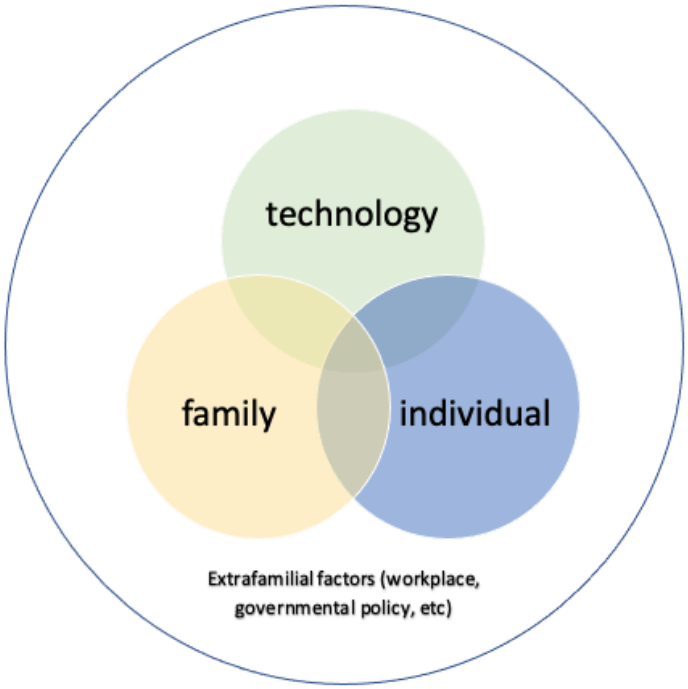
Example of technology use interactions recursively affecting family rules.

Both models also reflect variation in use by individual or family factors and technology characteristics. Lanigan's (2009) socio-technological model offers a comprehensive view of technology use and family life impacts; Hertlein's (2012, 2018) is more specific to potential impacts on the structure and processes of couple and family relationships.

Family Sociotechnological perspective

Lanigan's socio-technological family model (2009) (see figure below): "acknowledges the effect of multifunctional ICT's on families and the influence of familial, extrafamilial and individual characteristics on how those technologies are assimilated within the family context." (p. 595). The model highlights factors of the technology that influence its selection and use, including access, scope, adaptability, and malleability of the technology; obtrusiveness; resource demand (e.g., cost); and gratification potential. Family members are motivated to use technology based on their goals and intentions, attitudes, processing styles, personality (e.g., extroversion, social anxiety), and demographics (e.g., age, gender orientation, education). Family factors are largely represented as demographics, location, stage of development (e.g., transition to parenthood, launching), use by individual members, and family processes. Lanigan roots family processes of cohesion, adaptability, and communication in the model from the familiar Circumplex model of the family. Technological, individual, and family factors are encompassed in the extrafamilial context (Bronfenbrenner's exosystem, macrosystem, and chronosystem, 1995).

The socio-technological model can help us better understand "successful" ICT integration in family life. Lanigan observed from her research that "Successful families used the information capability of the technology to enhance family time by learning about community activities and planning vacations and time together.... Less successful families experienced conflict related to the computer. The conflicts resulted from difficulties establishing rules, perceptions that computer use was distancing a family member, and a reduction of family time, communication and emotional bonding..." (p. 604).



Family Sociotechnological Perspective (adapted from Lanigan, 2009).

Life Course Theory Applied to Family Technology Use

In their 2018 review of the literature on social media and the family, Dworkin et al. observed that frameworks interpreting technology's impacts on families are limited by not recognizing the impacts of time and context (including social network effects) and in technology itself. They propose the adoption of Elder's (1998) life course theory to our understanding of the family and technology. The theory emphasizes the role of history on development through time and place, and of life transitions and their developmental impact, with the social networks in which we are embedded conveying the effects of wider macroeconomic and social forces. The individual constructs their path through the life course using personal agency and the opportunities and resources afforded to them. While lifecourse is similar to family development theory in its perspective on lives

across time, Aldous (1990) observes that lifecourse focuses more on individual's interaction with others/ groups as they facilitate family event sequences.

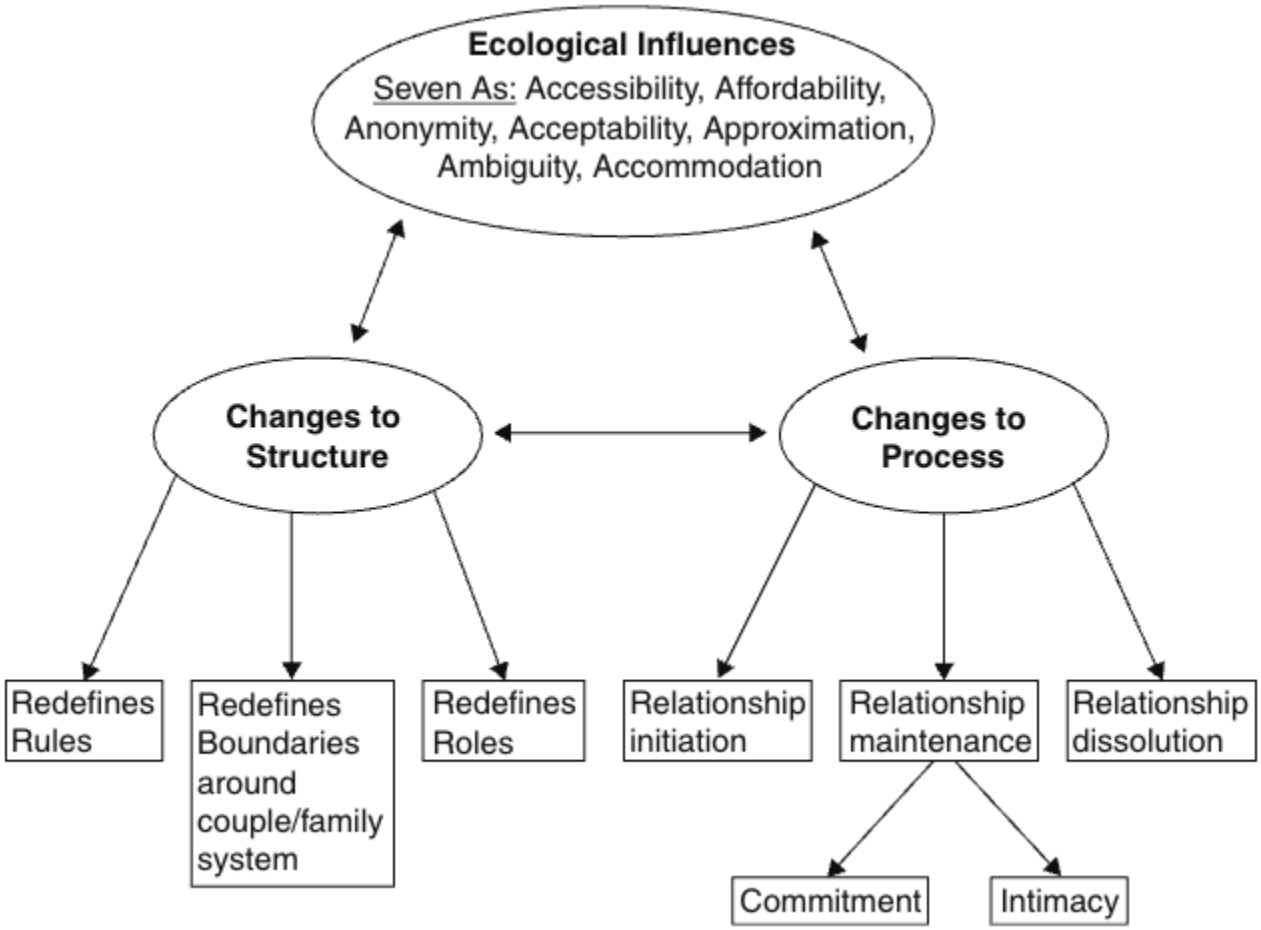
Dworkin and co-authors observe life course theory as allowing us to conceptualize change in technology itself as a contextual impact on use by the individual and in turn the family, as well as on the wider social networks afforded by our online and offline interactions — social networks that offer both bonded connections (strong ties) and dispersed, bridging connections to the flow of information and resources. And it allows us to see the individual change in context (including the family context), over time, as introduction to new technologies (whether used or not, and regardless of what degree or by whom) affects internal interactions. Families in the urban U.S. with easy access to high-speed internet, for instance, will be affected quite differently than those in sub-Saharan Africa, where the internet infrastructure doesn't allow for multiple devices or rapid connection. A life course perspective also aligns well with our recent experiences with COVID-19, as we consider our lives before and after COVID, and workers' increased desires to work from home and have more flexibility in managing multiple family roles.

Bronfenbrenner's ecological framework and and approach to social networks and family technology, highlighted earlier in this chapter, lend support to the use of life course theory, and echo the need to see families in a chronological, contextual manner and to visualize the transactional interactions that influence development. As indicated, Chapter 5 will explore Navarro and Tudge's (2022) adaptation of the ecological model that helps to explicate the person-process-context-time dimensions to explain ICT's influence in human development.

The chapter ends with a final model that also adapts extant family theory using observations from the virtual world of human communication and interaction — appreciating specific mechanisms of new media and our lives online that exist differently from the real world — and addresses impacts on family structure and processes.

Couple and Family Technology Framework

Hertlein (2012) (see also Hertlein, 2018; Hertlein & Blumer, 2013) offers a multi-theoretical model "to describe how technology influences the way couples and families establish rules, roles, and boundaries and interact with each other and the outside world." (p.375). The model organizes research literature into elements that integrate perspectives from family ecology (how technology as an environment influence affects the family), structural-functionalist theory (how technology affects rules, boundaries, and roles in families), and interaction-constructionist theory (how technology changes intimacy, relationship initiation, and relationship maintenance).



Couple and Family Technology Framework from Katherine M. Hertlein, Markie L. C. Blumer. The Couple and Family Technology Framework: Intimate Relationships in a Digital Age

Hertlein's framework sheds particular light on the characteristics of new media that differentiate them from other forms of communication and relationship interaction, most often assumed to occur in in-person, face-to-face contexts. She calls these characteristics "vulnerabilities" (p. 376), and highlights characteristics of digital media that can shift the perception of communication, the relationship, individuals in the relationship, and intent. The "Seven As" in Hertlein's model include **anonymity** (presence online can be masked), **accessibility** (easier, 24/7 access to the individual), **affordability** (the lower cost for means of interaction and entertainment), **approximation** (social presence, or the feel and representation of face-to-face interaction through text and sensory elements), **acceptability** (e.g., of using technology as the format for relationship communication), **accommodation** (enabling the individual to behave like their real vs. their ought self), and **ambiguity** (problematic behavior resulting from time spent online). The structures of the couple and family relationships are influenced through a redefinition of boundaries, roles, and relational rules. Processes of couple and family relationships are impacted through redefinitions of intimacy, and through alterations in how relationships are formed, initiated, and maintained. As Hertlein (2018, p. 90) observes, "the framework

considers the context in which the individual is embedded as well as future decisions to use technology and the manner in which technology is integrated into the family."

Examples of how ICT can contribute to a change in family structure include the power shift as children show parents how to work a new iPhone (roles), a couple renegotiation of what they share about their relationship on social media (rules) and a parent's distraction by incoming work messages while helping a child with schoolwork at home (boundaries). Accessibility to potential dates through a dating app can change process by helping initiate relationships. Approximation, or the social presence that videoconferencing can convey, can help extended family retain intimacy (thereby maintaining structure) during periods of separation such as COVID or during transnational living. Additional discussion of this framework will occur in Chapter 4 on couple relationships and ICT.

With these family, media, and blended models as a foundation for our critical perspectives on technology as influencing and influenced by families, we now move to a broader scope on family technology use in Chapter 3: differences in use within and across families.

2.2 REFERENCES

Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behavior. Prentice-Hall.

Aldous, J. (1990). Family development and the life course: Two perspectives on family change. *Journal of Marriage and the Family*, 571-583.

Allen, K. R. (2016). Feminist theory in family studies: History, reflection, and critique. *Journal of Family Theory & Review*, *8*(2), 207-224.

Balayar, B., & Langlais, M. (2021). Technology makes the heart grow fonder? A test of media multiplexity theory for family closeness. *Social Sciences*, 10(1), 25. http://dx.doi.org/10.3390/socsci10010025

Ballard, J., Weiling, E., Solheim, C., & Dwanyen, L. (ND) *Immigrant and refugee families* (2nd Ed). Global Perspectives on Displacement and Resettlement Experiences. https://open.lib.umn.edu/immigrantfamilies/

Baran, B., & Cagiltay, K. (2010). The dynamics of online communities in the activity theory framework. *Educational Technology & Society, 13*(4), 155–166.

Bronfenbrenner, U. (1995). Developmental ecology through space and time: A future perspective. In P. Moen, G. Elder, Jr., & K. Luscher (Eds.), *Examining lives in context: Perspectives on the ecology of human development,* pp. 619–647. American Psychological Association.

Carter, B., & McGoldrick, M. (Eds.). (1988). *The changing family life cycle: A framework for family therapy* (2nd edition). Gardner Press.

Chibucos, T. R., Leite, R. W., & Weis, D. L. (Eds.). (2005). *Readings in family theory*. Sage.

Christakis, N. & Fowler, J. (2009). *Connected: the surprising power of our social networks and how they shape our lives.* Little, Brown & Co.

Cochran, M. (1990). The network as an environment for human development, chapter 14. In: M. Cochran, M. Larner, D. Riley, L. Gunnarsson, and C. R. Henderson, Jr. (Eds.), *Extending families: The social networks of parents and their children*. Cambridge University Press.

Cochran, M., Larner, M., Riley, D., Gunnarsson, L., & Henderson, Jr., C. R. (1990). *Extending families: The social networks of parents and their children*. Cambridge University Press.

Cochran, M., & Brassard, J. (1979). Child development and personal social networks. *Child Development, 50*, 609–615.

Davis, R. (1989). Perceived usefulness, perceived ease of use, and user acceptance information technology. *MIS Quarterly 13*, 319–340.

DeFrain, J., & Assay, S. (2007). Family strengths and challenges in the USA. *Marriage & Family Review, 41*(3-4):281–307. DOI:10.1300/J002v41n03_04

Dworkin, J., Hessel, H., & LeBouef, S. (2019). The use of communication technology in the context of adolescent and family development: An integration of family and media theories. *Journal of Family Theory & Review, 11*(4), 510–523. https://doi.org/10.1111/jftr.12350

Dworkin, J., Rudi, J. H., & Hessel, H. (2018). The state of family research and social media. *Journal of Family Theory & Review*, *10*(4), 796–813. https://doi.org/10.1111/jftr.12295

Ertmer, P. A. (1999). Addressing first-and second-order barriers to change: Strategies for technology integration. *Educational Technology Research and Development, 47*(4), 47–61. http://dx.doi.org/10.1007/BF02299597

Ferguson, M., Carlson, D., Boswell, W., Whitten, D., Butts, M. M., & Kacmar, K. M. (2016). Tethered to work: A family systems approach linking mobile device use to turnover intentions. *Journal of Applied Psychology, 101*(4), 520. https://doi.org/10.1037/apl0000075

Gardiner, H. W., & Kosmitzki, C. (2017). *Lives across cultures: Cross-cultural human development*. Pearson Education.

Haythornthwaite, C. (2005). Social networks and internet connectivity effects. *Information, Communication and Society, 8*(2):125–147. https://psycnet.apa.org/doi/10.1080/13691180500146185

Hertlein, K. M. (2018). Technology in relational systems: Roles, rules, and boundaries. In J. Van Hook, S. McHale & V. King, (Eds.), *Families and Technology* (pp. 89–102). Springer, Cham. DOI: 10.1007/978-3-319-95540-7_5

Hertlein, K. M. (2012). Digital dwelling: Technology in couple and family relationships. *Family Relations, 61(*3) 374–387. https://doi.org/10.1111/J.1741-3729.2012.00702.X

Hertlein, K. M., & Blumer, M. L. (2013). The couple and family technology framework: Intimate relationships in a digital age. Routledge.

Hill, R. (1958). Generic features of families under stress. *Social Casework, 39,* 139–50.

Kim, H. W., Kankanhalli, A., & Lee, S. H. (2018). Examining gifting through social network services: A social exchange theory perspective. *Information Systems Research, 29*(4), 805–828. https://doi.org/10.1287/isre.2017.0737

Koerner, A. F., & Fitzpatrick, M. A. (2006). Family communication patterns theory: A social cognitive approach. In *Engaging Theories in Family Communication: Multiple Perspectives* (pp. 50–65). Sage Publications Inc. https://doi.org/10.4135/9781452204420.n4

Lanigan, J. D. (2009). A sociotechnological model for family research and intervention: How information and communication technologies affect family life. *Marriage & Family Review, 45*(6–8), 587–609. doi:10.1080/01494920903224194

McCubbin, H. I., Cauble, A. E., & Patterson, J. M. (1982). Family adaptation to crisis. In L. Hamilton, A. McCubbin, E. Cauble, & J. M. Patterson (Eds.), *Family Stress, Coping, and Social Support* (pp. 26–47).

Ma, A., & Pendergast, D. (2010). Innovative pedagogies for family and consumer science/home economics education—Utilizing computer-based collaborative learning to foster lifelong learning attributes. *Family and Consumer Sciences Research Journal, 38*(3), 273–288. https://doi.org/10.1111/J.1552-3934.2009.00018.X

Mauthner, N. S., & Kazimierczak, K. A. (2018). Theoretical perspectives on technology and society: Implications for understanding the relationship between ICTs and Family Life. In B. B. Neves & C. Casimiro (Eds.), *Connecting families? Information and communication technologies, generations, and the life course* (pp. 21–40). Bristol. https://doi.org/10.1332/policypress/9781447339946.003.0002

Navarro, J. L., & Tudge, J. R. (2022). Technologizing Bronfenbrenner: Neo-ecological theory. *Current Psychology*, 1–17. Advance online publication. https://doi.org/10.1007/s12144-022-02738-3

Olson, D. H. (2000). Circumplex model of marital and family systems. *Journal of Family Therapy, 22*(2), 144–167. https://doi.org/10.1111/j.1545-5300.1979.00003.x

Olson, D. H., DeFrain, J. D., & Skogrand, L. (2014). *Marriages and families: Intimacy, diversity, and strengths* (8th ed.). McGraw-Hill. Chapter 3: Understanding marriage and family dynamics.

Pearce, E. B. (n.d.). The family: A socially constructed idea. Contemporary Families: An Equity Lens. Retrieved April 11, 2022, from https://openoregon.pressbooks.pub/families/chapter/the-family-a-socially-constructed-idea/

Rosino, M. (2016). ABC-X model of family stress and coping. Encyclopedia of Family Studies, 1–6. https://doi.org/10.1002/9781119085621.WBEFS313

Sharaievska, I., & Stodolska, M. (2015). Redefining boundaries in families through Social Networking Leisure. *Leisure Sciences, 37*(5), 431–446. https://doi.org/10.1080/01490400.2015.1021882

Simpson, V. N. (2013). Media selection in a text-based digital world: Examining richness, experience, and presence within computer-mediated interpersonal communication. Masters thesis. Leicester University.

Smith, S. R., & Hamon, R. R. (2021). *Exploring family theorie*s (5th ed.) Oxford University Press.

Super, C. M., & Harkness, S. (1986). The developmental niche: A conceptualization at the interface of child and culture. *International Journal of Behavioral Development, 9*, 545–569. https://doi.org/10.1177/016502548600900409

Teo, T., Lee, C., & Chai, C. (2008). Understanding preservice teachers' computer attitudes: Applying and extending the technology acceptance model. *Journal of Computer Assisted Learning, 24*(2), 128–143. https://doi.org/10.1111/j.1365-2729.2007.00247.x

U.S. Census Bureau. (2021, October 8). Subject definitions. Census.gov. Retrieved April 11, 2022, from https://www.census.gov/programs-surveys/cps/technical-documentation/subject-definitions.html

Venkatesh, V., Morris, M., Davis, G., & Davis, F. (2003). User acceptance of information technology: toward a unified view. *MIS Quarterly, 27*(3), 425–478. https://doi.org/10.2307/30036540

Walker, S. K., Lee, S. K., & Hong, S. (2021). Workplace predictors of family educators' technology acceptance attitudes. *Family Relations*, 70(5), 1626–1642. https://doi.org/10.1111/fare.12583

White, J. M., Martin, T. F., & Adamsons, K. (2018). Family theories: An introduction. Sage Publications.

2.3 LEARNING ACTIVITIES

Social constructions of the family

In the chapter we discussed ways that families have been represented in television shows over the decades. These representations contribute to and reflect a social construction of family. Let's take a more current view. Take a few minutes to look at the social media accounts, online news, information feeds, and other applications you visit most frequently. Considering the role of media in shaping our sense or construction of the family, what messages and images of families seem most prevalent?What about parenting? Or intimate (romantic couple) relationships? What social constructions of families are presented in our online worlds? Of parenting? Of intimate relationships?Consider your use of these accounts as a child and preteen. What collective messages might you have formed about families from your technology use?

Moving from family theory to theoretical applications to families and technology

When framing questions in new areas, researchers often begin with a well-known concept. Consider each of the following points that summarize some well-known arguments, stemming from theory, about families. For each one, add a question that a researcher might ask when framing the argument in relation to family technology use.

- The family **serves functions** to its members, itself, and society, and our interest is in aiding

the successful completion of those functions. EXAMPLE RESPONSE: Family cohesion provides an emotional sense of connectedness through which each family member feels cared for and valued. What is the role of social media in fulfilling siblings' sense of connectedness?

- The family serves as an **open system** — its members influence each other, and each member is influenced by external factors. It is dynamic and transactional, and thrives when it is **flexible** and yet demonstrates **cohesion**.
- Family members are all **developing humans**. The family itself is a developing unit. Those individual and collective changes also influence family functioning.
- Living in shifting **contexts, families are particularly influenced** by their settings, time, events, political conditions, and so on.
- The family — and its members — are **social constructions**. How they view themselves and how society views the family changes over time.

Theoretical base of family research on technology (1)

The article below is an excellent example of using Family Systems Theory as the basis for research on technology and the family (in this case, boundaries and social media):

Sharaievska, I., & Stodolska, M. (2015). Redefining boundaries in families through social networking leisure. *Leisure Sciences*, *37*(5), 431-446.

After reviewing this article, see if you can find another piece of research that uses an extant family theory as the basis for its investigation. How might using research examples like this help us better understand technology's role in family dynamics? How might they help us better understand the theory as it applies to families?

Theoretical base of family research on technology (2)

Identify at least three pieces of research on a similar theme related to families and technology. For example, families' use of texting for communication, or parent-teen conflict over parental monitoring of screen time. Select research studies published within the last ten years. Examine the theoretical base for the research. Which family, parenting, or other theory is used? How do the studies compare with regard to theoretical base? Are any atheoretical, or do not state a theory? As a result of their efforts, do the authors propose any changes to existing family theory to address what technology offers to family life?

2.4 BLOG PROMPTS

Existing family theory is useful for conceptualizing, describing, and studying family interactions, contexts, and well-being, but is it sufficient for considerations of information communications technology (ICT)? On one hand, we can argue that it is not, given the affordances of technology as they demonstrate various dynamics on roles and relationships. On the other, these theories have withstood the test of time for decades and have been applied to other phenomena facing families. Can it be argued that these theories and frameworks — or at least some of them — could be used?

Identify a sample research article that studies family technology use applied to a fairly traditional family framework (e.g., systems). Using your school library site or Google Scholar, use keywords on family, technology (or insert the name of a specific technology like texting or social media), and the name of the theory (e.g., social construction, family systems, symbolic interaction). Comment on the degree to which the perspective fits the study. Knowing what you do about family theory and dynamics, and about facets of technology function and use, would you recommend any different framework be considered for this study?

The chapter focuses on two primary frameworks for looking at families and technology implications. Applying frameworks to real-life examples is a way to demonstrate and challenge our understanding. Select one of the two frameworks: Lanigan's socio-technological framework or Hertlein and Blumer's framework. In the post, provide a brief summary (like a paragraph) of the framework, then describe a real-life example, such as couple relationships and the use of technology, or parent supervision of a child's technology use. The application may be something personal that will be relevant to you and help you apply these frameworks. Consider what research questions the use of this framework or model might suggest.

2.5 ADDITIONAL RESOURCES & READINGS

Family and Family Theories (general)

- Abela, A., & Walker, J. (Eds.) (2013). *Contemporary issues in family studies: Global perspectives on partners, parenting and support in a changing world*. Wiley Blackwell Publishing. http://dx.doi.org/10.1002/9781118320990
- Allen, K. R. (2016). Feminist theory in family studies: History, reflection, and critique. *Journal of Family Theory & Review*, *8*(2), 207-224.
- Benokraitis, N. (2015). *Marriages & families: Changes, choices, and constraints* (8th ed.). Pearson.
- Hamon, R. R., & Smith, S. R. (2017). Family science as translational science: A history of the discipline. *Family Relations*, *66*(4), 550–567. https://doi.org/10.1111/FARE.12273
- Smith, S. R., & Hamon, R. R. (2021). *Exploring family theories* (5th ed.). Oxford University Press. ISBN 978-0197530528
- Olson, D., DeFrain, M., & Skogrand, L. (2022). *Marriages and families: Intimacy, diversity and strengths* (10th ed.). Chapter 3: Understanding marriage and family dynamics. McGraw Hill.
- Family Theories (specific)
- Galvin, K. (2018). *Family communication* (10th ed.). Routledge
- Koerner, A.F., & Fitzpatrick, M.A. (2002). Toward a theory of family communication. *Communication Theory 12*(1), 70–91. https://doi.org/10.1111/j.1468-2885.2002.tb00260.x
- Ledbetter, A.M., & Beck, S.J. (2014). A theoretical comparison of relational maintenance and closeness as mediators of family communication: Patterns in parent-child relationships, *Journal of Family Communication, 14*(3), 230-252, DOI: 10.1080/15267431.2014.908196
- Suitor, E.A. (2016). Introduction: Critical approaches to family communication research: Representation, critique, and praxis. *Journal of Family Communication, 16*(1), 1–8. https://doi.org/10.1080/15267431.2015.1111219
- Jeong, Y-J., You, H-K, & Kwon, Y.I. (2014). One family in two countries: Mothers in Korean transnational families. *Ethnic and Racial Studies*, 37(9), 1546–1564. http://dx.doi.org/10.1080/01419870.2012.758861.

Information and Communication Theories

- Haythornthwaite, C. (2005). Social networks and Internet connectivity effects. *Information,*

Community & Society, *8*(2), 125–147.

- Griffin, E., Ledbetter, A., & Sparks, G. (2023). *A first look at communication theory* (11th ed.). McGraw Hill. ISBN10: 126429610X
  ISBN13: 9781264296101
- McQuail, M., & Dueze, M. (2020). *McQuail's media and mass communication theory* (7th ed.) SAGE Publications Ltd.

Family Technology Theories

- Dobbs, S. (2020) *Connected: Social media use and quality family time*. California State University.
- Dworkin, J., Hessel, H., & LeBouef, S. (2019). The use of communication technology in the context of adolescent and family development: an integration of family and media theories. *Journal of Family Theory & Review* 11: 510–523. https://doi.org/10.1111/jftr.12350
- Hertlein, K. M., & Blumer, M. L. (2013). *The couple and family technology framework: Intimate relationships in a digital age*. Routledge.
- Mauthner, N. S., & Kazimierczak, K. A. (2018). Theoretical perspectives on technology and society: Implications for understanding the relationship between ICTs and Family Life. In B. B. Neves & C. Casimiro (Eds.), *Connecting families? Information and communication technologies, generations, and the life course* (pp. 21–40). Bristol. https://doi.org/10.1332/policypress/9781447339946.003.0002
- Walker, S. (2015). Social dynamics of media use on parenting: A conceptual framework. In C. Breuss (Ed.), *Family Communication in the Age of Digital and Social Media*. Peter Lang.

CHAPTER 3: DIFFERENCES WITHIN AND ACROSS FAMILES' TECHNOLOGY USE

3.1 DIFFERENCES WITHIN AND ACROSS FAMILIES' TECHNOLOGY USE

One can state, without exaggeration, that the observation of and the search for similarities and differences are the basis of all human knowledge.

—— Alfred Nobel

Chapter Insights

- Differences lie within individuals in families, and in families as a whole. These differences, more than anything, illustrate the complexity in characterizing technology use within and across families. They also reveal issues of underlying equity and social justice, and of families and technology.
- "Use" is a widely variable term. It can be operationalized to represent which device and application, for what purpose, for how long, in which way, with whom, and where. To compare "use" effectively is to identify the standard for the definition and measure first.
- Functional differences in technology use may be seen by individuals within the family and by subsets of family members. How siblings use applications together may be far different than how a child uses the application with a parent. These functional differences may represent differences in family dynamics, structure, and roles.
- Family member and whole family variation in technology use depends on their attitudes toward technology and on comfort, skill, and access. Access can vary by geography, economics, education, language, and ability. Situations putting strain on families, such as COVID-19, immigration, or other separations, can reveal access needs that present serious gaps. Attitude, comfort and skill, and digital readiness are directly related to access.

- Ensuring access to technology — specifically, internet service, cellphone service, and accommodations for ease in using technology — is a question that has policy and political implications. Whose responsibility is it to ensure internet access?
- After reading this chapter, identify what you feel inspired by, the questions that remain for you, and the steps you can take for your own technology use to be more intentional.

Introduction

During the COVID-19 pandemic, headlines brought attention to disparities in children's academic achievements due to differences in their ability to keep up with school online (Dorn et al., 2021). With remote learning, which depended on children having access to computers and internet in the home, children across the globe who lacked internet access or had limited and shared access to technology struggled to keep up. More recently, the news has highlighted the challenges faced by families fleeing Ukraine during the Russian conflict. For them, having a smartphone with data meant staying connected and accessing resources; in other words, it was truly a lifeline (Cantrill, 2022). It's difficult to imagine navigating the challenges faced by refugees without being able to call or access the internet.

These modern-day examples highlight differences among families with regard to technology access and use. Even among families in less extreme conditions, differences exist that can mean significant divides. A family in a rural area without a high-speed connection or with few cell phone towers can face delays in getting valuable health information or doing business. Families also vary by their preferences, functional needs for technologies, habits, and behaviors with media. The Federal Communications Commission identifies household differences by light, moderate, and high internet use based on current use of one, two, three, or four devices at a time.

All families vary by their preferences, functional needs for technologies, habits, and behaviors with media. Specific families face issues with access: a family in a rural area without a high-speed connection or with few cell phone towers can face delays in getting valuable health information or doing business.

Families also vary within their membership, as individuals demonstrate functional behavioral, attitudinal, and skill differences in the daily use of ICT. If you read that "smartphones are owned by 85% of families in the U.S.," what would you want to know? *Which* U.S. families? The majority of all families? The majority of

white, middle-class families? Even a sample indicating "representativeness in the U.S." would need clarification. You might want to know if a family is defined by biological and immediate family, contains extended families, or includes those not directly related. And you might question this statistic based on families' habits or access to technology.

For family professionals, awareness of these differences can be key to understanding family conflict, communication, and flexibility. It may also direct attention to technology access as an issue for families, when attention might be on school performance or employment. This chapter examines technology use in the family to see how it may differ within families (e.g., in ways that might have an impact on relationships and systemic family functioning), and across families (e.g., how family variation might indicate differences in family well-being by virtue of use or access).

Before we begin exploring family differences in technology use, think of your own family — who is in it, and what are their ages and relationships and roles in the family. Consider how the members of your family would be similar or different in terms of their technology use, comfort, and access. Now think of another family that you know fairly well. How are they similar or different in their use compared to your own family?

Family Differences

"happy e-thanksgiving" by ali edwards is licensed under CC BY 2.0.

"Family dinner" by goosmurf is licensed under CC BY 2.0.

No two families are alike, and no two families use technology in the same ways. As discussed in the last chapter, families can be defined by structure, composition, or membership — varying by number, member age, member roles and responsibilities (e.g., two parents, one parent, a grandparent), number of children, and subsystems (e.g., parent + oldest child, father and father). As discussed throughout this book, these differences will reflect the ways in which technology is used by individuals and with family members as well. Families with several children in the preteen and teenage years may have multiple phones; a single parent with an infant would not. As the family is an open system, each is differently influenced by social, belief, and extended family systems (Olson, et al, 2014). These systems may influence their practices, knowledge, value, and needs for using technology.

Families with close connections to extended members (e.g., cousins and grandparents across the country or the world) may include videoconferencing through apps like FaceTime as a nightly practice or regularly text through WhatsApp. Smaller families with all members living in the same household would not. And families vary by demographics, education, household income, language, and geographic location. As a student, you may have experienced how your level or exposure to formal education can influence interactions with settings that integrate technology in learning. Over time, this might influence your skill and comfort. Geographic location can affect access to the internet and to social and practical resources that encourage use.

"Kosovo Refugees" by United Nations Photo is licensed under CC BY-NC-ND 2.0.

A note of caution as we proceed. As we examine family technology use, we need to distinguish research that uses data from families from research that uses data on "households." While households often include families, this isn't always the case. For example, a U.S. government report on internet broadband access and smartphone ownership may say it describes U.S. "families." Closer inspection, however, reveals that the data was taken from U.S. households. The U.S. Census Bureau defines a household as all people who occupy a single housing unit, regardless of their relationship to one another (Population Reference Bureau, 2020). Can we say that this represents "families"? Households may include biological or legal families, but may also contain a group of adults living together or several families. And as you cross continents, a demographer's definition of "family" or "household" might vary depending on government or bureaucratic definitions. Similarly, research claiming to explore "family" technology practice or impacts requires careful attention to the true population of interest. A single-parent family is different from a family with one child under the age of 18, which is different from a blended family of two homosexual parents of six children ranging from birth through age 18, which is different from an Asian-American family comprised of first-, second-, and third-generation members.

As we discuss technologies used by families , it's important that we have a clear understanding of what is meant by family, technology, and technology use. With these standards understood, we can explore why differences within and across families matter.

Measurement of Technology Use

Variation in "use" definitions.

Consider your own family once again. If you were asked to observe ICT use by its members over a typical day, what would you look for? Which type of tech your family members use? Which applications they are on, for how long? How your parents' use for work seems focused on their laptops while your little brother's time

Operationalizing the construct of technology use is important, as the term is general and can mean many things. As a result, researchers measure it differently.

spent gaming is on his phone? In Gottschalk's discussion of videogames in her review on children and technology use impacts, she cites research that assess use as frequency, while another looks at use as the type of game played, and deployment of touch screen technology. Some studies assess use very broadly. In Hamilton's study on children's use in Jamaica (2010), use or consumption is a single item: "Frequency of individual use of the Internet in the last 12 months (from any location)" along with many indicators of technology possession. Reflect on your own "use" in the last few hours. What are the many ways in which a researcher might categorize your practice?

A few examples:

- Device ownership: which, how many, how many per person/per family, which model, how many different devices?
- Functions: what is the device or app used for? The function may be refined more specifically, say to indicate parenting behavior: communication with children, number of times reassuring texts are sent to a child, and so on.
- How is technology used to accomplish a purpose? Which purpose? For what benefit or consequence?
- Use behavior: device or application frequency (minutes per day, hours per day, days, interaction events, times the screen is touched, times the phone is picked up
- Use by an individual (to benefit the individual)? Use as shared?
- Where is the device or application used?
- Device application "problem" (e.g., addiction, being a tech Luddite?) or identity affiliation (e.g., feminist expression, Goh, 2013)

Another common oversight is when researchers report "use," but are really measuring device ownership or application membership. Just because your dad has an Apple iPod Nano he bought in 2005 doesn't mean that he uses it. Or you were "gifted" with a device (thus ownership), but you rarely pick it up. A related concept is "membership." Social media applications abound. People download them, and create accounts. But use is not equivalent to membership or having an account. In the graphic below, Twitter users make posts in varying frequencies (McClain et al., 2021). Just under half (49%) post fewer than five tweets a month, while just over half (52%) report posting daily (https://backlinko.com/twitter-users#twitter-users), and the majority of Twitter content is contributed by only 25% of users. Yet Twitter can boast that it has 400 million accounts. Clearly, there are differences between those holding accounts and those who are active users. Preferences and behavior vary. Determining what the researcher means by "use" is as critically important as determining your

definition and interest in family. Without doing so, it will be difficult to aggregate research findings for a clear assessment of "use."

Keep an eye out for advanced methodologies and definitions of "use" as research into the impact of technology on the family continues. Innovative projects such as the Human Screenome Project, for instance, collect rich data from screen captures from individuals' phones, revealing possibilities for interpreting the interplay between technology-integrated interest and interaction (Reeves, et al., 2019). The implications from this data in better understanding family system and subsystem dynamics are endless.

Definitions of devices, applications, and power

Depending on the individual, the generic term "technology," or even "information and communications technology" can mean a particular device, or an application or software on the device. A good place to begin with specificity on use is to define precisely what is meant by "technology" devices, applications, or even the internet, when they are included in measurement.

According to Wikipedia, **digital media** is

> any communication media that operate with the use of any of various encoded machine-readable data formats. Digital media can be created, viewed, distributed, modified, listened to, and preserved on a digital electronics device. *Digital* can be defined as any data represented by a series of digits, while *media* refers to methods of broadcasting or communicating this information. Together, *digital media* refers to mediums of digitized information broadcast to us through a screen and/or a speaker.

This also includes text, audio, video, and graphics that are transmitted over the internet for viewing or listening to on the internet. Digital media platforms, such as YouTube, Vimeo, and Twitch, accounted for viewership rates of 27.9 billion hours in 2020.

Social media**,** on the other hand, is a more specific term. It refers to "interactive technologies and digital channels that facilitate the creation and sharing of information, ideas, interests, and other forms of expression through virtual communities and networks. It has some common features:

1. Social media are interactive, Web 2.0 Internet-based applications.
2. User-generated content — such as text posts or comments, digital photos or videos, and data generated through all online interactions — is the lifeblood of social media.
3. Users create service-specific profiles for the website or apps that are designed and maintained by the social media organization.
4. Social media helps the development of online social networks by connecting a user's profile with those of other individuals or groups.

As of January 2022 (Statista), the top three social media services, based on having more than 200 million users each, were Facebook, YouTube and WhatsApp.

Powering use

Just as "electricity" can be considered the power that enables us to watch television, or "gasoline" the thing that currently powers our cars, the internet can be seen as what "powers" our ability to use applications and devices. Wikipedia describes the Internet (or internet) as

> the global system of interconnected computer networks that uses the Internet protocol suite (TCP/IP) to communicate between networks and devices. It is a network of networks that consists of private, public, academic, business, and government networks of local to global scope, linked by a broad array of electronic, wireless, and optical networking technologies. The Internet carries a vast range of information resources and services, such as the inter-linked hypertext documents and applications of the World Wide Web (WWW), electronic mail, telephony, and file sharing.

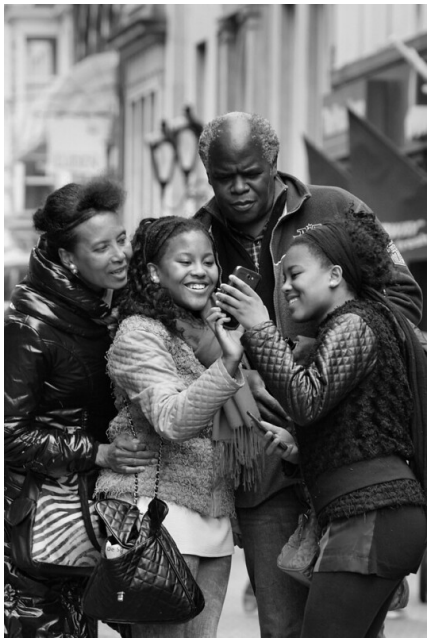
Unless we are using an application "off line" or have "downloaded" a file, much of our use of social media, search sites like Google or DuckDuckGo, videoconferencing on FaceTime, and learning management systems like Blackboard is dependent on our device's connection to the internet.

A cellular or mobile network (for texting and calls) is "a communication network where the link to and from end nodes is wireless. The network is distributed over land areas called 'cells,' each served by at least one fixed-location transceiver (typically three cell sites or base transceiver stations). These base stations provide the cell with network coverage which can be used for transmission of voice, data, and other types of content.... When joined together, these cells provide radio coverage over a wide geographic area" (Wikipedia).

A **peripheral** is "an auxiliary device used to put information into and get information out of a computer.The term *peripheral device* refers to all hardware components that are attached to a computer and are controlled by the computer system, but they are not the core components of the computer, such as the CPU or power supply unit" (Wikipedia). Input devices include mice, keyboards, graphic scanners, and microphones. Output devices include monitors, printers, headphones, and speakers. Input/output devices also include external hard drives.

Devices

Portable devices used to perform "information" and "communications" functions include small, handheld machines like cellular (mobile) phones and smartphones — portable devices that combine mobile telephone and computing functions into one unit. Look at your smartphone. What are all the functions that it performs? At the very least you can use it as a calculator, and to make calls, take pictures and videos, and send emails and text messages. Later in the chapter, we'll discuss differences in access to the internet and to devices like cell phones. Many of these differences fall along demographic lines.



"Selfie" by d_t_vos is licensed under CC BY-NC-SA 2.0.

Applications, or Software

During the day we often check our Instagram accounts, or open a file on a document production program like Word. Though we are "on our phone" or "on the laptop," we're technically using a specific application or piece of software on that device. According to Wikipedia,

> an application program (application or app for short) is a computer program designed to carry out a specific task other than one relating to the operation of the computer itself, typically to be used by end-users. Word processors, media players, and accounting software are examples, and the collective noun refers to all applications collectively. The other principal classifications of software are system software, relating to the operation of the computer, and utility software ('utilities). Applications may be bundled with the computer and its system software or published separately and may be coded as proprietary, open-source, or projects. The term "app" often refers to applications for mobile devices such as phones.

In technical papers (including reports for a course), we refer to our reliance on particular applications. Because these are intellectual properties, often with trademarks and copyrights, it is important to remember to capitalize them (e.g., Instagram, Facebook, TikTok). This is particularly important as some applications like Canvas (learning management software) are also nouns in the English language that would not be caught in spell checking programs.

Functional Differences in Use

Now that we have some basic terminology for technology, we can consider the various functions technology performs as they may relate to an individual's or family's purpose.

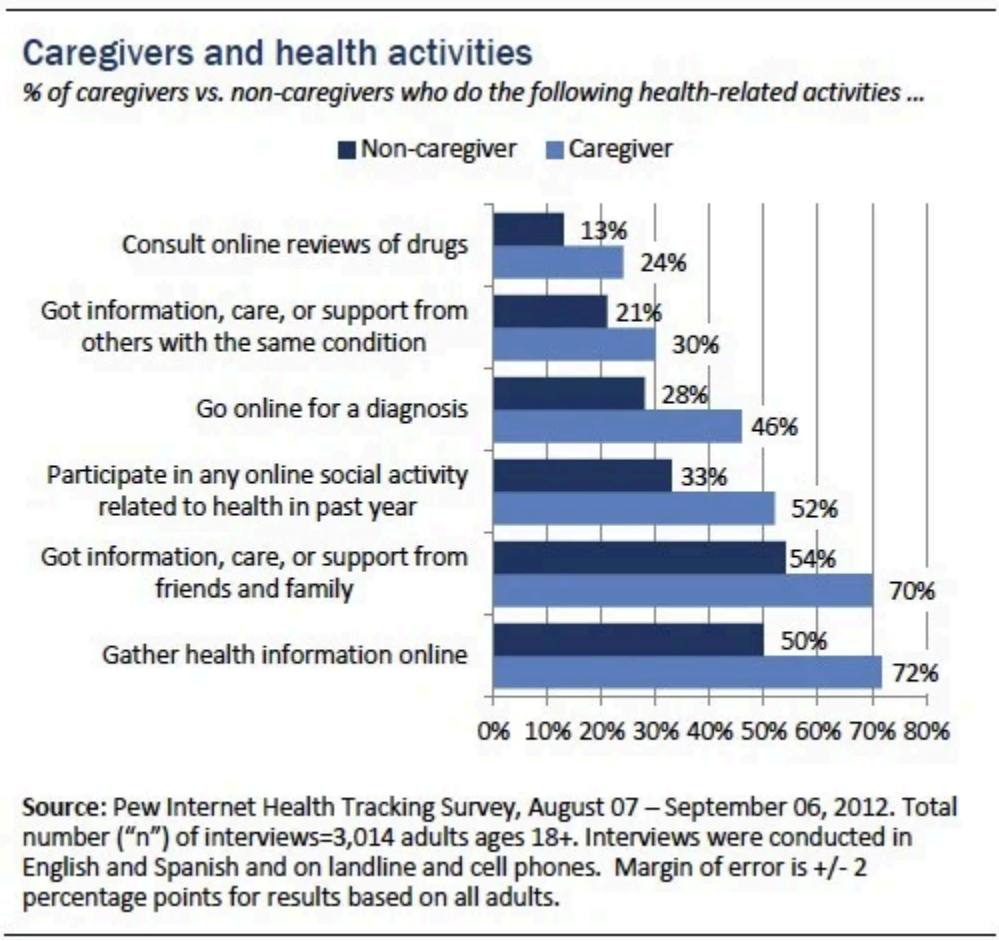
CC 2.0 by Denise Krebs

- **Communication:** between couples, parent and child, parents and co-parents, extended family (grandparents). Who, how, with what frequency, and which device for which family member.
- **Connectivity:** How is this different? What is social networking? What is the value of social networking in family life?
- **Information gathering** (informal learning): for parenting, decision-making, problem-solving. By whom (e.g., parents, adult children)? On what topics? Using what means? On the internet (info searches)? From others (discussion boards, social media)?
- **Entertainment:** couple and family time together via gaming, co-viewing media. Most parents monitor the content of the videogames that children play.
- **Utilities:** banking, health care, travel and transportation, taxes, housing, food, navigation.
- Use of tech outside the family that affects the family: work, school (formal learning by young children, older children), use of technology devices in the family system (parents as learning heroes).

These functions apply to most anyone using technology; they are not unique to the family. Families who play online and videogames together, for example, find it a great way to spend time together. Parents report playing videogames with their children because it's fun, it's a good opportunity to socialize with their child, their child asks them to, they can monitor what children are playing and thus exposed to, and they enjoy it (ESRB, 2022). Ninety-four percent of parents pay attention to the videogames played by their children, 71% say videogames have a positive influence on their child's life, 67% play videogames with their children at least once weekly.

Yet when we view these activities in terms of of fulfilling family roles and the development of individuals within a family, their use can be distinguished from individual, group, or societal use distinct from the family. A function unique to the family is the fulfillment of family roles — parenting, caregiving (direct action and indirect fulfillment), and relationship initiation, maintenance, or possible dissolution. This final function distinguishes technology used by families from others, in so far as use has direct or indirect benefits to family members or the family as a whole.

For example, while Facebook use as a means for social networking has long been a focus for research (e.g., Zhuravskaya, et al., 2020), a study on the transition to parenthood finds its role valuable in creating new network members and resources for social support (Bartholomew, et al,. 2012). As illustrated below, those fulfilling caregiving roles in families demonstrate different information search behaviors than non-caregivers (Fox & Duggan, 2013). The same report indicates that one in three caregivers are likely to use health "trackers" through technology to monitor the health of the person they are caring for.



Pew Research Center.

Yet, naturally, caregiving in families is most considered parenting or childrearing, and chapters 5, 6, and 7 explore the role technology plays in these family roles as distinct from adult-only technology use.

As an example of distinguishing adult technology use from use that holds specific value to the family, in our early work (around 2008) studying parents' technology use — as parents in the parenting role — it was essential to add specific functions of the parenting role to identify how ICT was used (e.g., Walker, et al., 2011; Walker & Rudi, 2014). It was impossible to extrapolate from information about "adults" in extant research. as not all adults are parents, and adult roles and functions can include tasks that don't include

childrearing. Our study needed to add items specific to the parenting role (e.g., "monitor who my child interacts with" or "validate my observations as a parent.")

Further analysis of family use of technology to fulfill family functions might consider different configurations of which family members are using technology with others. Differences might exist, for example, between parents, co-parents in divorce and separation, parents and children, siblings, family and grandparents, grandchild and grandparent, foster parent and foster child. Such configurations are limited only by the variations of family membership and structure. Thinking of your own family, identify examples of family members' use of technology might fulfill family functions.

Thinking of your own family, identify examples of family members' use of technology might fulfill family functions.

Here are examples from my family. There are three of us, my husband, my 28-year-old daughter (who lives in another state), and myself.

- I text my daughter good morning (parental nurturance; relationship maintenance).
- She Venmos a request for repayment of my plane ticket (practical assistance between family members).
- I may use FaceTime to talk with her during a weekend day as she works on her taxes (family communication, parental assistance in problem-solving, parental guidance to an emerging adult on learning a life skill of adulthood).
- I search Google Flights to find available, low-cost airfares for the wedding of an extended family member (family connectedness).

In each way I use technology, I fulfill my role in the family as parent and family member. Each action could be measured for use by any adult — searching for a flight, talking to others through FaceTime, requesting money. Yet each action can be defined as it relates to a family role and to relationships and family outcomes.

Factors influencing use

Technology attitudes, comfort and skills.

To further understand differences in use is to be aware of external factors that influence use: comfort and skills in using technology (conditioned by a number of factors) and access. Davis' Technology Acceptance Model (1989), discussed in the previous chapter, identifies use as conditioned by attitudes of acceptance, which are influenced by the perception that a technology is easy to use and is useful. Context research supports the idea

that external conditions, including resources and encouragement, can make a difference in the motivation to use technology and acquire skills. Technology use varies as well by the individual's attitude, skill, and comfort.

Consider the people in your life. Are some "techy" and capable of picking up any kind of device or system, while others need assistance when something new is suggested? Do some love using technology and feel a bit addicted to applications, like gaming, while others are suspicious of tech's influence and use it sparingly or only out of necessity? Now consider how these differences in skill and attitude might affect use. The friend who feels very comfortable with technology will probably use it more, while the one whose skill level is low and/or who worries about its negative effects will use it far less.

"Geek Squad camp provides hands-on technology skills" by Fort George G. Meade is licensed under CC BY 2.0.

In some studies, attitudes toward technology use are a proxy for actual behavior. In behavioral intention models in psychology, feelings about an activity and an intention to do the activity are demonstrated to relate to the actual behavior. Technology acceptance measures attitudes that are favorable or open to the value of technology in one's life or work. These may be measured through statements like the following, with each rated on a scale of 1 (strongly disagree) to 7 (strongly agree) (adapted from Teo et al., 2017):

- Technology makes work more interesting
- Working with technology is fun
- I like using technology
- I look forward to those aspects of my job that require me to use technology

While these items don't indicate how a technology is used, as a cluster of items or construct they can indicate favorability toward use, and serve as a point to which factors of influence can compare, such as whether the individual perceives technology to be easy to use ("I find it easy to get technology to do what I want it to do") and/or if the individual perceives value in using a particular technology ("Using technology will increase my productivity" or "I find technology is a useful tool in my work"). In research with family educators and family professionals, we determined that ease of use and value had a direct bearing on attitudes of technology acceptance (Walker et al., 2021). Other factors related to skill and comfort lie with exposure to external resources and supports, such as technical training and being surrounded by others who value technology.

In 2021, Pew Internet determined that about one-third of adults in the U.S. can be characterized as having

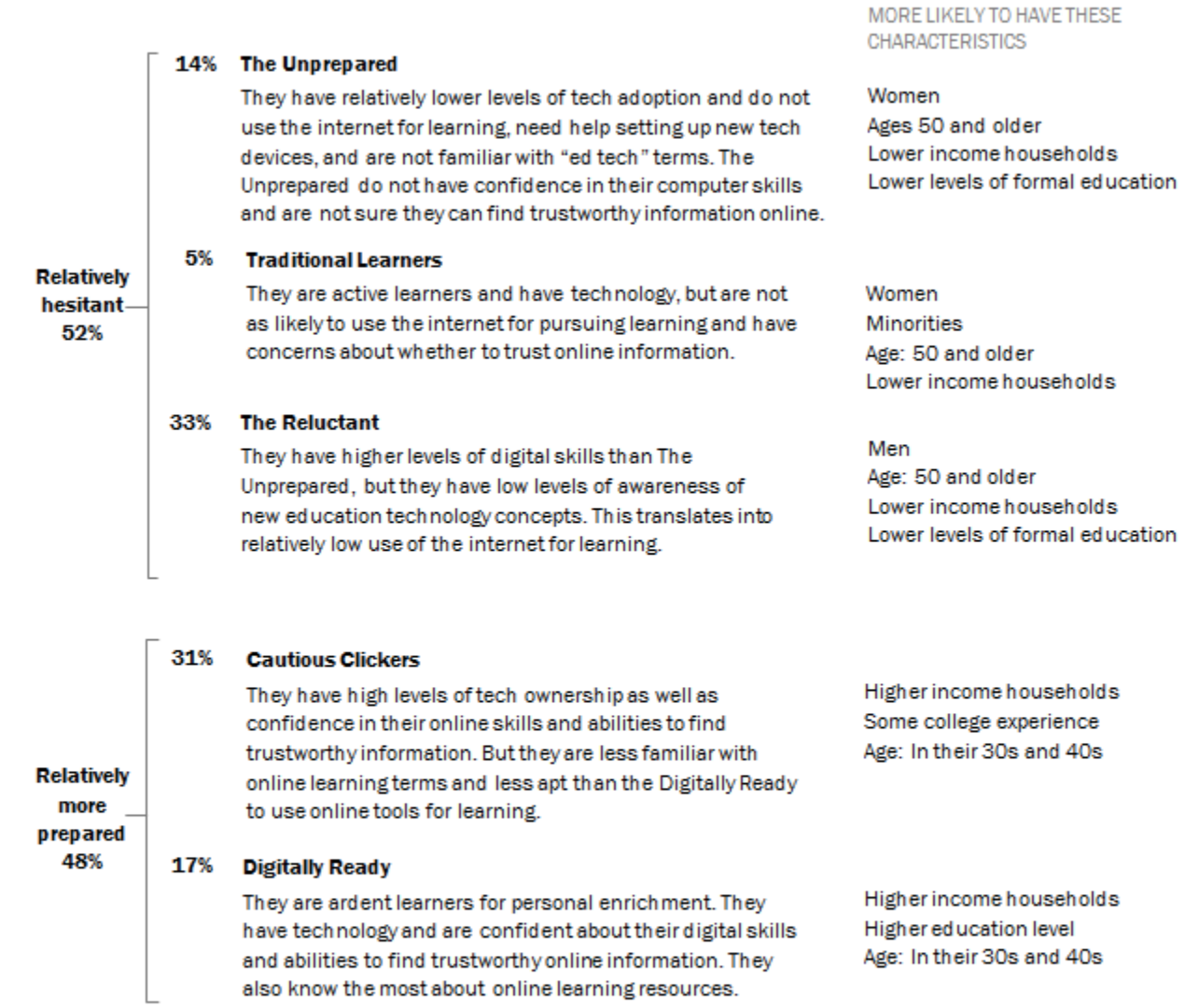
Those who demonstrated lower 'tech readiness' are people who are not at all or only a little confident using their digital devices to do the things they need to do online, or usually need someone else to set up or show them how to use new devices.

"Lower tech readiness" (Vogels et al., 2020). Tech readiness aligns along demographic lines. Older Americans, for example, are more likely to demonstrate lower tech readiness, as are those with less income or education. Yet attitude may co-exist with tech readiness skills. In the same research, the share of Americans with lower tech readiness who say the internet has been essential to them is 27 percentage points lower than for those with higher tech readiness. They too are more likely to use older applications, such as email or calling by phone, rather than videoconferencing or text messaging. And readiness has indirect effects. During the pandemic, 47% of parents with less digital readiness reported difficulty in helping their children with remote learning, compared with 24% of higher readiness parents.

These results mirror earlier research by Pew revealing digital readiness characteristics that correlated with other demographic indicators (2015):

Digital readiness: The five groups along a spectrum from least ready to most ready

% of U.S. adults in each group



Source: Survey conducted Oct. 13-Nov. 15, 2015.
"Digital Readiness Gaps"

PEW RESEARCH CENTER

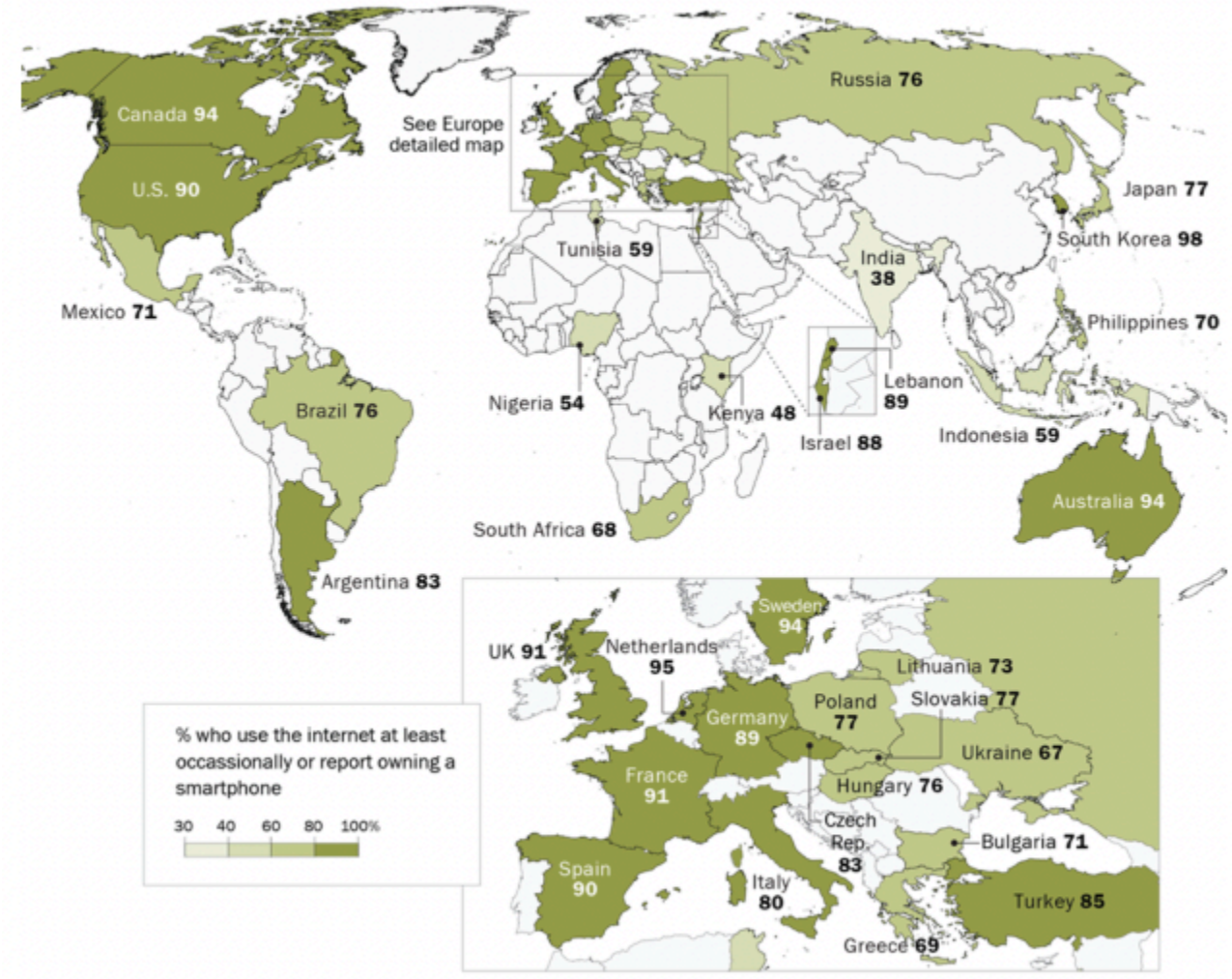
Access

While internet access seems ubiquitous in our modern society, it is not guaranteed. Global data indicate that, on average, at least 77% of the world's population has at least some access to the internet (Schumacher & Kent, 2020) (figure x below). Countries and regions with more advanced economies report higher rates of use (close to 87%): Australia, Canada, South Korea, the Netherlands, Europe, the Americas, and the

Commonwealth of Independent States (CIS) (ITU, 2019; Schumacher & Kent, 2020). Countries with emerging economies report lower use (47% on average), and those in the least-developed countries — primarily in Africa — report an average of 19%. Across Africa, averages range from 4.7% in Western Sahara to 87.2% in Kenya (Internet World Stats, 2020). The range in Latin America is similarly wide, with saturation high in countries like Argentina (92.2%) and Costa Rica (85.5%), and low in countries such as Nicaragua (30.2%) and Honduras (28.7%). Since 2015, overall access to the internet exceeds household computer ownership, with the ITU reporting that it is no longer necessary to have a computer at home to access the internet (2019, p. 7).

Internet use is a prevalent part of many people's lives across the globe

% who use the internet, at least occasionally, or report owning a smartphone

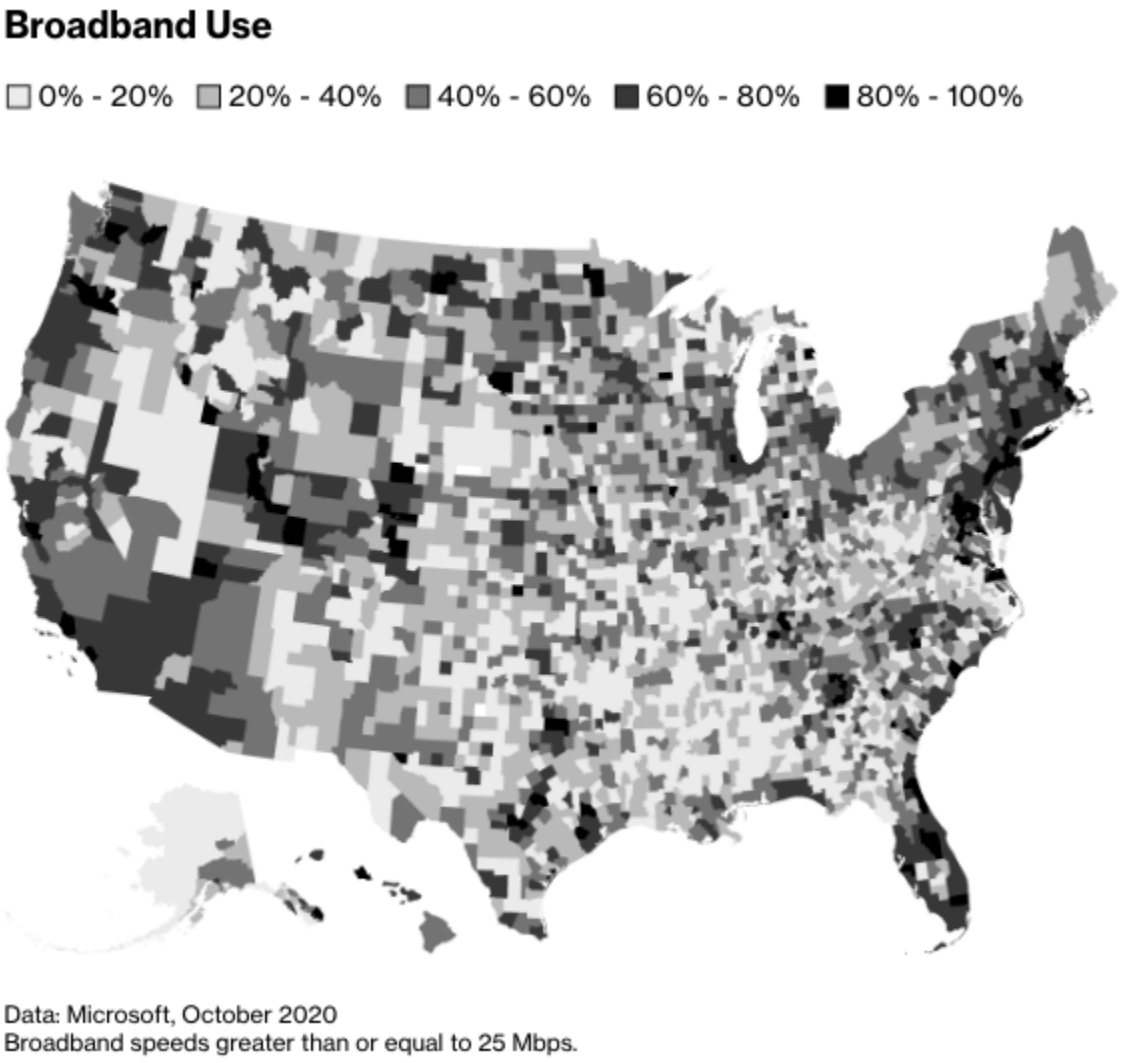


Source: Spring 2019 Global Attitudes Survey. Q51 & Q53. U.S. data is from a Pew Research Center survey conducted Jan. 8-Feb. 7, 2019.

PEW RESEARCH CENTER

As illustrated by the map below, use of high-speed broadband is significantly lower in some areas of the U.S.

compared to others. Similarly, cell phone ownership is higher in countries with developed economies (e.g., over 90% in European countries). Demographic factors such as younger age, higher household income, and education level are related to greater access and higher rates of internet and cell phone use.



Bloomberg.

Access differences affect the family's ability to take full advantage of technological efficiencies and benefits. Access is particularly critical when families are mobile or relocating due to immigration, living transnationally, or separated due to military service or employment. For families experiencing migration, having access to the internet is critical for communication with family members, efficient movement (e.g., documentation at border control),

Access differences affect the family's ability to take full advantage of technological efficiencies and benefits.

integration into new locations (e.g., finding employment, housing, services), using geolocation services, transferring money, and more (McAuliffe, 2021). Lack of access and and the lack of accommodation to the needs of immigrant family (e.g., translation of applications) affects comfort in using technology and acquisition of basic computer skills. Inequities lead to "knowledge gaps," particularly in children, and to differences in the acquisition of technology skills needed for employment, settlement, and possible resettlement. For any family, but particularly for those who are vulnerable (such as during transnational living or immigration), gaps in access exacerbate challenges brought about by disparities in income, education, employment, housing and sanitary living conditions, and health care.

Scholars assert that equity will remain a prevalent issue for families in the future (Anderson, et al., 2021). While equity and internet access as human rights are macro-level policy issues, small-scale efforts get technology into the hands of families and children in need. Schools, for example, may distribute devices, routers, and wifi hubs; provide additional technology coaching; and train teachers to be sensitive to equity and access needs when integrating technology in coursework. In California, nearly one-third of school-age children lack access to broadband networks, and lack of access is nearly double for children of color compared to their White counterparts. In addition to the "quick fixes" of providing wifi hubs and internet access in public buildings, the "Broadband for California" bill, Senate Bill 1130, would make "funds for broadband accessible to all communities in the state and ensure that projects built with these funds are future-proof and have more open-access to our communities" (Gonzalez & Steyer, 2020). As this story from Arkansas illustrates, providing reliable broadband in remote communities is a significant challenge politically and practically (Carr, 2021), yet it is worth the effort. Faster connections can mean greater participation in school, family connectivity, employment, and the tasks of daily life for families. Those interested in progress in Minnesota may want to follow the Broadband Task Force of the Office of Broadband Development (https://mn.gov/deed/programs-services/broadband/task-force/).

Scholars assert that equity will remain a prevalent issue for families in the future....While equity and internet access as human rights are macro-level policy issues, small-scale efforts get technology into the hands of families in need.

Beyond geography and economics, other demographic characteristics differentiate use and access. Younger individuals are far more likely to be on social media, use the internet, and own a smartphone. And educational attainment can vary use. With education level established by country, higher access is seen in those who have completed more schooling (Schumacher & Kent, 2020). Variations can be narrow, as in the case of South Korea, where educational level varies use by 4%. In Nigeria, however, a 60% difference occurs: 13% of those with limited education access the Internet, compared with 73% with more education. In every region of the world, to varying degrees, internet use is greater for men than women. Differences are smaller in more developed

countries (e.g., 1–2%), but in developing and least-developed countries (LDCs), men's access exceeds women's by 10–12% (ITU, 2019). And the gap, as measured between 2013 and 2019, is growing — 7% in developing countries, and 15.9% in least-developing countries (ITU, 2019). Gender differences in mobile phone ownership also exist, mimicking those in internet access.

"Hands, Deaf-Blind Keyboarding" by cobalt123 is licensed under CC BY-NC-SA 2.0.

Questions of access must also consider ability: persons with disabilities may be need accommodation devices and software. And we can consider language: how many applications are available in the language that an individual reads, writes, and understands?

Differences in demographics, ability, and language do more than bifurcate our view of who does or does not use or have access to technology. They also reveal equity differences that affect the ability to take full advantage of technological efficiencies, access to information, connectivity, and interactivity for learning and employment. As noted, access is particularly critical when families are mobile, relocating due to immigration or being refugees, live transnationally, or are separated due to military service or employment (Carter & Renshaw, 2016; Karraker, 2015). During the pandemic, although focus was on family internet access to ensure children's school participation, homeless families often fell through the cracks (Shapiro, 2020).

Shelter wi-fi can be unreliable, and a school's lack of devices to distribute to students may particularly affect homeless children whose household does not have devices of its own.

There appears to be a reciprocal relationship between access and comfort. The ITU reports that, in 40 of the 84 countries with available data, less than half of the population have basic computer skills (e.g., copying a file, sending an email with an attachment) and in 60 countries fewer than half report having standard skills (e.g., installing software). While lack of access and skills is referred to as the "digital divide," others characterize the space by the deficits created: the "access gap" or the "knowledge gap" (Wei & Hindman, 2011). Geographic location can make a difference. Those living in more rural areas not only may lack access, but they may be unable to gain the digital skills necessary for work in the 21st century. Wood (2018) reports that large tech-based companies such as Amazon are moving toward exclusively operating in larger, urban cities, creating a further divide between urban and rural regions in technology training and skills. Blum-Ross and others (2018) suggest that varying levels of skills, literacy, and confidence with technology are a new way to understand family diversity.

As observed, the "digital readiness" spectrum runs from those who are unprepared to those who are digitally ready. Approximately half are unprepared, traditional learners, and/or reluctant. They tend to be older and in households with lower income and education. The other half are those more prepared, labeled the the "cautious clickers" and the "digitally ready." These groups are younger and have higher incomes. Consider why these demographics of age, income, and education may relate to these attitudinal and skill differences. One possibility is that feelings of confidence and skill relate to access, as limited income can mean less exposure to technology (or efficient technology).

As we understand divides in internet access, and see how local and regional efforts are being made to ensure equity, the question of responsibility remains. The graphic below, from Commonsense Media, reveals the digital and academic achievement gaps in K-12 education, and proposes policy action.

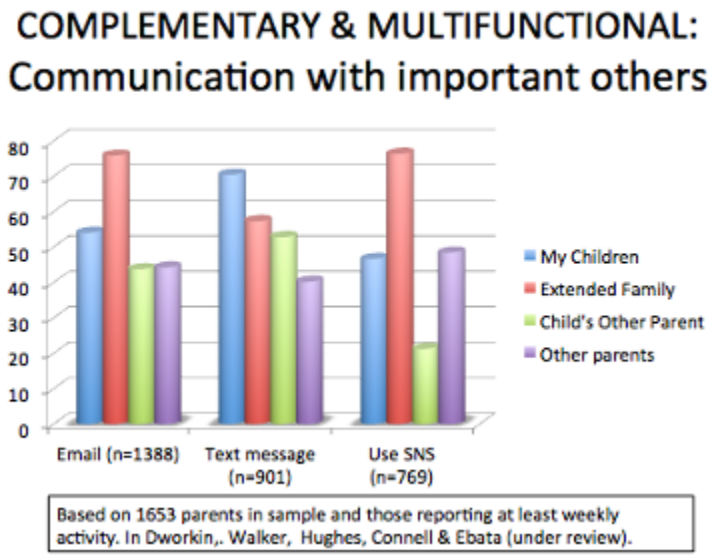
Commonsensemedia.org

In 2021, Pew Research asked a representative sample of U.S. individuals if the government is responsible for

ensuring internet access (McClain et al, 2021). The majority (62%) said no. Seventy percent don't believe it's the government's responsibility to ensure that all Americans have cell phone access. Differences in this opinion fall along political views, with Democrats twice as likely to support the government's role than Republicans. Those with lower incomes are more likely to favor government assistance. What do you believe? Whose responsibility is it to ensure internet access, and what do we mean by "ensure"?

Within Family Differences

Families, particularly those with children still in school, may represent a fairly stable picture of race, ethnicity, education, income, and geography. Yet within the family there will be differences in technology use due to differences in individuals and individual relationships and roles. In the figure below, using data from 2012, we see that parents reported using email and social media more often with extended family, while they were more likely to text their children and the other parent.



Consider the members of your family. Write down each family member's name and draw a circle around it How would you characterize each members' use? Consider the functions that technology serves for them, what their use might look like in terms of device ownership, and the frequency with which they use particular applications for school, work, entertainment, and hobbies. Consider their comfort, skill, and attitude with regard to using technology. Then step

back and consider the differences within your family. Are you on social media less than your younger sister? But more than your father? Is your brother more likely to be a gamer than other members of the family? Is your younger sister addicted to social media, while you can look at it or ignore it but don't feel hooked? How do you and your sister talk to each other through ICT differently than you would with your parents? How might they connect with each other, or use technology together (say, for family financial matters) differently than you do for school or for work? What influences those differences? Consider our discussion about comfort and skill, functional interests, role fulfillment, and access. How might models such as the Technology Acceptance Model help explain differences in, say, your use as a family member compared to your mother's?

In our early study of 1653 parents, we clustered them based on their technology use, identifying differences by the number and frequency of devices used, variations in device functions, and attitudes towards technology (Walker, et al., 2011). As you can see in the figure, the majority used technology in moderation, used it for a variety of functions, and had positive attitudes. In the green areas there were a number of parents we called the "omnivores," those who possessed more devices, participated in a wide variety of activities, and had very positive attitudes about technology. Also in the green zone where those who used technology frequently and used a limited number of devices, along with those who had many devices, used them frequently, and weren't happy about it. Minimal users seemed happy with their limited use or were indifferent or almost seem to experiment using various technologies. Again, we see wide variation by device ownership, frequency of use, and attitudes. It isn't unusual for parents as adults in the same household to hold positions at different sections of this attitude-device-action spectrum.

As noted earlier, there are some user "type" differences in access that may affect attitudes. Are there be digital literacy or readiness or knowledge gaps within your family?

Sophistication mapping of differences in technology use within families can be used to predict potential attitudinal differences and relational interactions. Readers are encouraged to use Hertlein and Blumer's (2015) family technology-focused genogram to explore family technology dynamics.

Across family differences

"staying connected" CC by US Army

Now that you've considered the differences in your own family, think about two other families you know well. Perhaps they are families of your friends or your partner, people on your street, or relative's families. How would you describe their technology use as a family? Consider their roles and relationships, family configurations, and conditions regarding access and skill for each family member (as well as you can). Does the family have a lot of devices? Are they avid gamers? Do they hold jobs or attend school in ways that dictate member use? See, for example, the picture to the right, with the deployed father connecting with his family back home. Or perhaps families that are immigrating to a new country (such as those currently fleeing from the Ukraine or from Serbia). Regardless of the reason for transnational status, families depend heavily on the internet and digital devices to stay connected to each other and to valuable information that help families thrive. Considering your own family and these other two, how similar or different would you say they are in their technology use?

Access

Earlier, we focused on family differences in access to the internet and to cell phone services. As these factors influence individuals within families in terms of their comfort, skill, and outcomes related to technology integration in their lives, they also mean whole family differences. As Karraker (2015) notes, disparities in technology access, and resultant inequalities between groups of families, exacerbate economic inequality, representations of the idea of family, and representations of gender. They diminish family members' voices in the virtual environment, to the degree that we ask whose norms and values are being transmitted. During COVID, limits on access meant differences in educational achievement that favored higher-income families. And as we consider the economic value to families of having internet access, with the functional ability to help families communicate, purchase goods, find transportation, and make connections for their children's education and their family's health, we begin to see the critical importance of an equitable Global Society that ensures access to the internet for all.

We've observed the political divisions and differences in opinion about the U.S. federal government ensuring internet access for families. The United Nations Bill of Human Rights identifies access to the internet as a

basic human right. From a family science perspective, the question of access holds different meaning. As Karraker (2015) noted, "meeting global families where they live regarding digital communication will force family scholars to continue to examine our very suppositions of what it means to be a family" (p. 70). As we work to understand how family members and families as a whole differ in their use of technology (in terms of functions and desired activities; attitudes, comfort, and skill; and access and exposure), we should ask what this work means to the research we conduct with families, and to the design and delivery of family services. Further, as we discuss in chapter 12, we must attend to public and social policy that attends to access to the internet as a basic human right.

Conclusion

As we are cautious to define family, so too are we cautious in assuming how families use technology. Families are as likely to vary in their use as family members are to vary from one another. The internal dynamics of use differences are critical to our understanding of communication and relationship dynamics, and to the role demands that may be fulfilled through the use of ICT. Across families, we see large differences in attitudes and preferences, and also in factors that policy can address — most importantly, access, comfort, and skill in using technology. It is in these differences that knowledge, digital, and information divides occur, divides that exacerbate inequities in our global society.

In Chapters 4 through 10 we explore specific ways in which family members and subsystems of the family, use technology and the impacts on their individual and collective well-being.

3.2 REFERENCES

Anderson, J., Rainie, L., & Vogels, E. (2021, February 18). Experts say the "New Normal" in 2025 will be far more tech-driven, presenting more challenges. https://www.pewresearch.org/internet/2021/02/18/experts-say-the-new-normal-in-2025-will-be-far-more-tech-driven-presenting-more-big-challenges/

Atske, S., & Perrin, A. (2022, February 16). Home broadband adoption, computer ownership vary by race, ethnicity in the U.S. Pew Research Center. Retrieved April 24, 2022, from https://www.pewresearch.org/fact-tank/2021/07/16/home-broadband-adoption-computer-ownership-vary-by-race-ethnicity-in-the-u-s/

Ayllón, S., Holmarsdottir, H. B., & Lado, S. (2021). Digitally deprived children in Europe. DigiGen working paper series No. 3. http://dx.doi.org/10.6084/m9.figshare.14339054

Bartholomew, M., Schoppe-Sullivan, S., Glassman, M., Kamp Dush, C. & Sullivan, J. (2012). New parents' Facebook use at the transition to parenthood. *Family Relations* 61, 455–469. https://doi.org/10.1111/j.1741-3729.2012.00708.x

Biagi, F., & Loi, M. (2013). Measuring ICT use and learning outcomes: Evidence from recent econometric studies. *European Journal of Education, 48*(1), 28–42. https://doi.org/10.1111/ejed.12016

Bill Text – SB-1130 Communications: California Advanced Services Fund. (2019). Retrieved April 24, 2022, from https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201920200SB1130

Blum-Ross, A., Donoso, V., Dinh, T., Mascheroni, G., O'Neill, B., Riesmeyer, C., & Stoilova, M. (2018). Looking forward: Technological and social change in the lives of European children and young people. Report for the ICT Coalition for Children Online. ICT Coalition.

Broadband Task Force. Minnesota Department of Employment and Economic Development. (2022, April 22). Retrieved April 24, 2022, from https://mn.gov/deed/programs-services/broadband/task-force/

Cantrill, A. (2022, March 7). Smartphones are a lifeline for Ukrainian refugees. Bloomberg.com. Retrieved April 24, 2022, from https://www.bloomberg.com/news/newsletters/2022-03-07/smartphones-are-a-lifeline-for-ukrainian-refugees

Carr, A. (2021, September 22). Microsoft and an army of tiny telecoms are part of a plan to wire rural America. Bloomberg.com. Retrieved April 24, 2022, from https://www.bloomberg.com/news/features/2021-09-22/microsoft-google-part-of-plan-to-get-rural-america-high-speed-internet

Carter, S. P., & Renshaw, K. D. (2016). Spousal communication during military deployments: A review. *Journal of Family Issues, 37*(16), 2309–2332. https://doi.org/10.1177/0192513X14567956

Cobo, C., Hawkins, R., & Rovner, H. (2020, March 31). How countries across Latin American use technology during COVID-19. World Bank Blogs. Retrieved from https://blogs.worldbank.org/education/how-countries-across-latin-america-use-technology-during-covid19-driven-school-closures

Commentary, G. (2020, July 28). Close the learning gap by providing broadband access to all Californians. CalMatters. Retrieved April 24, 2022, from https://calmatters.org/commentary/my-turn/2020/07/close-the-learning-gap-by-providing-broadband-access-to-all-californians/

Davis, F.D. (1989). Perceived usefulness, perceived ease of use, and user acceptance information technology. *MIS Quarterly 13*, 319–340. https://doi.org/10.2307/249008

Dorn, E., Hancock, B., Sarakatsannis, J., & Viruleg, E. (2021, November 11). Covid-19 and education: The lingering effects of unfinished learning. McKinsey & Company. Retrieved April 24, 2022, from https://www.mckinsey.com/industries/education/our-insights/covid-19-and-education-the-lingering-effects-of-unfinished-learning

Fox, S., & Duggan, M. (2020, August 14). Tracking for health. Pew Research Center: Internet, Science & Tech. Retrieved April 24, 2022, from https://www.pewresearch.org/internet/2013/01/28/tracking-for-health/

Goh, D. (2013). Who we are and what we want. Information, *Communication & Society, 16*(7), 1019–1041. https://doi.org/10.1080/1369118x.2011.649773

Gottschalk, F. (2019). Impacts of technology use on children: Exploring literature on the brain, cognition and well-being (OECD Education Working Papers, NO. 195). Paris, France: OECD Publishing. Retrieved from https://doi.org/10.1787/8296464e-en

Hamilton, H. G. (2010, June 14). Measuring household ICT access and individual use: Jamaica ... Measuring ICT Access and Use. Retrieved April 24, 2022, from https://unstats.un.org/unsd/economic_stat/ICT-Korea/Documents/Hamilton_Jamaica.pdf

Hillman, V. (2020, June 17). Parenting and learning in a time of global pandemic: what policy makers and school leaders should do for children's education right now and consider the future. Parenting for a Digital Future (blog). https://blogs.lse.ac.uk/parenting4digitalfuture/2020/06/17/learning-during-pandemic/

Household Broadband Guide. Federal Communications Commission. (2020, March 11). Retrieved April 24, 2022, from https://www.fcc.gov/consumers/guides/household-broadband-guide

Internet World Statistics, (2022). Retrieved from https://www.internetworldstats.com/stats.htm .

ITU (International Telecommunication Union) (2019) Measuring digital development: Facts and figures 2019. ITU, Geneva, Switzerland: Place des Nations. Retrieved from https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2019.pdf

Jamieson-Proctor, R., & Finger, G. (1970, January 1). Measuring and evaluating ICT use: Developing an instrument for measuring student ICT use. IGI Global. Retrieved April 24, 2022, from https://www.igi-global.com/chapter/measuring-evaluating-ict-use/35923

Karraker, M. (2015). Global families in a digital age. In C. Breuss (Ed.), *Families in a digital world.* Peter Lang., 55–75.

McAuliffe, M.Ed. (2021). Research handbook on international migration and digital technology. E. Elgar Online. https://doi.org/10.4337/9781839100611

McClain, C., Widjaya, R., Rivero, G., & Smith, A. (2021, November 22). Comparing highly active and less active tweeters. Pew Research Center: Internet, Science & Tech. Retrieved April 24, 2022, from https://www.pewresearch.org/internet/2021/11/15/2-comparing-highly-active-and-less-active-tweeters/

McClain, C., Vogels, E. A., Perrin, A., Sechopoulos, S., & Rainie, L. (2021, September 1). Navigating technological challenges. Pew Research Center: Internet, Science & Tech. Retrieved April 24, 2022, from https://www.pewresearch.org/internet/2021/09/01/navigating-technological-challenges/

Olson, D. H., DeFrain, J. D., & Skogrand, L. (2014). *Marriages and families: Intimacy, diversity, and strengths* (8th ed.). New York: McGraw-Hill. Chapter 3: Understanding Marriage and Family Dynamics.

Population Reference Bureau (2020) What is a household? PRB. (n.d.). Retrieved April 24, 2022, from https://www.prb.org/resources/what-is-a-household/

Reeves, B., Ram, N., Robinson, T. N., Cummings, J. J., Giles, C. L., Pan, J., Chiatti, A., Cho, M., Roehrick, K., Yang, X., Gagneja, A., Brinberg, M., Muise, D., Lu, Y., Luo, M., Fitzgerald, A., & Yeykelis, L. (2019). Screenomics: A framework to capture and analyze personal life experiences and the ways that technology shapes them. *Human–Computer Interaction, 36*(2), 150–201. https://doi.org/10.1080/07370024.2019.1578652

Salcedosays:, K. L. B., & Deansays:, B. (2022, January 5). How many people use Twitter in 2022?. Backlinko. Retrieved April 24, 2022, from https://backlinko.com/twitter-users#twitter-users

Schumacher, S., & Kent, N. (2020, April 2). 8 charts on internet use around the world as countries grapple

with COVID-19. Pew Internet and American Life. Retrieved from https://www.pewresearch.org/fact-tank/2020/04/02/8-charts-on-internet-use-around-the-world-as-countries-grapple-with-covid-19/

Shapiro, E. (2020). These families feel forgotten as NYC pushes to open schools. *The New York Times*. September 14. https://www.nytimes.com/2020/09/14/nyregion/homeless-school-reopening-nyc.html

Statista Research Department (2022, March 8). Most used social media 2021. Statista. Retrieved April 24, 2022, from https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/

Teo, T., Lee, C. B., & Chai, C. S. (2007). Understanding pre-service teachers' computer attitudes: Applying and extending the technology acceptance model. *Journal of Computer Assisted Learning, 24*(2), 128–143. https://doi.org/10.1111/j.1365-2729.2007.00247.x

Vogels, E., Perrin, A., Rainie, L., & Anderson, M. (2020, April 20). Fifty three percent of Americans say the internet has been essential during the Covid-19 outbreak. Pew Internet and American Life. Retrieved from https://www.pewresearch.org/internet/2020/04/30/53-of-americans-say-the-internet-has-been-essential-during-the-covid-19-outbreak/

Walker, S. K., Dworkin, J., & Connell, J. (2011). Variation in parent use of information and communications technology: Does quantity matter? *Family and Consumer Sciences Research Journal, 40*(2), 106–119. https://doi.org/10.1111/j.1552-3934.2011.02098.x

Walker, S., & Rudi, J. H. (2014). Parenting across the social ecology facilitated by information and communications technology: Implications for research and educational design. *Journal of Human Sciences and Extension, 2*(2). http://www.jhseonline.com/#!current-issue/co3j

Walker, S. K., Lee, S. K., & Hong, S. (2021). Workplace predictors of family educators' technology acceptance attitudes. *Family Relations, 70*(5), 1626–1642. https://doi.org/10.1111/fare.12583

Wei, L., and Hindman, D. (2011). Does the digital divide matter more? Comparing the effects of new media and old media use on the education-based knowledge gap. *Mass Communication and Society, 14*(2), 216–235. doi:10.1080/15205431003642707

Wikimedia Foundation. (2022, April 18). Application software. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Application_software

Wikimedia Foundation. (2021, January 2). Base transceiver station. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Base_transceiver_station

Wikimedia Foundation. (2022, April 13). Cellular network. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Cellular_network

Wikimedia Foundation. (2022, April 21). Cell site. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Cell_site

Wikimedia Foundation. (2022, April 24). Computer Network. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Computer_network

Wikimedia Foundation. (2005, January 16). Communication Network. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Communication_network

Wikimedia Foundation. (2022, April 24). Computer. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Computer

Wikimedia Foundation. (2022, April 16). Computer program. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Computer_program

Wikimedia Foundation. (2022, April 23). Content creation. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Content_creation

Wikimedia Foundation. (2021, April 6). CPU. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/CPU

Wikimedia Foundation. (2004, August 6). Digital Photo. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Digital_photo

Wikimedia Foundation. (2022, April 14). Digital Media. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Digital_media

Wikimedia Foundation. (2022, April 22). Email. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Email

Wikimedia Foundation. (2013, May 8). End-users. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/End-users

Wikimedia Foundation. (2022, January 20). File sharing. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/File_sharing

Wikimedia Foundation. (2022, February 23). Hypertext. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Hypertext

Wikimedia Foundation. (2021, October 22). Information sharing. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Information_sharing

Wikimedia Foundation. (2022, March 26). Internet. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Internet

Wikimedia Foundation. (2022, April 18). Internet protocol suite. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Internet_protocol_suite

Wikimedia Foundation. (2022, April 18). Internetworking. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Internetworking

Wikimedia Foundation. (2021, July 25). Internet telephony. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Internet_telephony

Wikimedia Foundation. (2022, April 4). List of social networking services. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/List_of_social_networking_services

Wikimedia Foundation. (2019, April 26). Media Player (software). Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Media_player_(software)

Wikimedia Foundation. (2022, April 21). Mobile device. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Mobile_device

Wikimedia Foundation. (2022, April 24). Mobile phone. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Mobile_phone

Wikimedia Foundation. (2022, January 4). Mobile computing. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Mobile_computing

Wikimedia Foundation. (2022, February 17). Mobile app. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Mobile_app

Wikimedia Foundation. (2022, March 27). Network virtualization. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Network_virtualization

Wikimedia Foundation. (2022, January 30). Optical networking. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Optical_networking

Wikimedia Foundation. (2022, April 24). Peripheral. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Peripheral

Wikimedia Foundation. (2022, April 19). Power Supply Unit (computer). Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Power_supply_unit_(computer)

Wikimedia Foundation. (2022, April 16). Proprietary software. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Proprietary_software

Wikimedia Foundation. (2022, April 19). System software. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/System_software

Wikimedia Foundation. (2022, April 13). Social Network. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Social_network

Wikimedia Foundation. (2022, April 23). Social Media. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Social_media#cite_note-Kaplan-5

Wikimedia Foundation. (2022, April 23). Social Media. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Social_media

Wikimedia Foundation. (2022, April 23). Social Media. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Social_media#cite_note-SMDefinition-2

Wikimedia Foundation. (2022, February 17). Transceiver. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Transceiver

Wikimedia Foundation. (2021, December 19). Utility software. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Utility_software

Wikimedia Foundation. (2022, April 23). User-generated content. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/User-generated_content

Wikimedia Foundation. (2017, June 6). Virtual communities. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Virtual_communities

Wikimedia Foundation. (2022, April 16). Video. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Video

Wikimedia Foundation. (2022, April 16). Web 2.0. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Web_2.0

Wikimedia Foundation. (2022, March 17). Website. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Website

Wikimedia Foundation. (2022, April 22). Web application. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Web_application

Wikimedia Foundation. (2022, April 21). World wide web. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/World_Wide_Web

Wikimedia Foundation. (2022, April 22). Wireless. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Wireless

Wikimedia Foundation. (2022, January 14). Word processor. Wikipedia. Retrieved April 24, 2022, from https://en.wikipedia.org/wiki/Word_processor

Wood, M. (2018, December 6). How rural America is turning into a Digital Desert. Marketplace. Retrieved April 24, 2022, from https://www.marketplace.org/2018/12/05/tech/how-rural-america-turning-digital-desert

Zhuravskaya, E., Petrova, M., & Enikolopov, R. (2020). Political effects of the internet and social media. *Annual Review of Economics, 12*, 415–438. https://doi.org/10.1146/annurev-economics-081919-050239

3.3 LEARNING ACTIVITIES

Mapping App to Function

Look at your phone (smartphone). Examine the range of apps on the device, perhaps writing down each one. What do you do with each application? What function does it serve? Consider your relationships with friends, partners, and family members. How do you use each application, if at all?

Considering Behavior

What is your behavior with your smartphone? How would you document it? Provide a list of ways that you might observe or track your use. Why might your use matter? In other words, what is the impact of your checking your phone frequently during the day? How much time do you spend on particular apps?

Considering Your Family

Identify each member of your immediate family. List them by name and their role in the family. Considering devices, applications, attitudes, knowledge and skills, and behaviors, identify use for each family member. Looking across your family, how are individual members similar or different in their technology use?

What do those differences mean to:

- Family communication?
- Family connectedness?
- Family conflicts?
- Family strengths?

Access Resources

In this video, a single mother talks about her using the library to access the computers for herself and her children. After viewing the video, consider options for families like this who don't have home access to the internet. Identify resources in your town or neighborhood for adults to work/attend school, for children to complete homework and school projects, and for families to make connections with others.

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://open.lib.umn.edu/technologyfamily/?p=192#oembed-1

Considering Cross-Family Dynamics

With another person, have a discussion about your families. How might your families be similar and different with regard to technology use, access, and comfort? Are there challenges faced in one family but not another? Are their strengths exhibited by one family and not the other?

3.4 BLOG PROMPTS

In the chapter you were asked to consider your own family's use of technology — variations in each member's selection and use of devices and application, their attitudes toward technology, their comfort in using it, and their exposure to it. In comparison with one or two other people, or thinking of family depictions on television, identify similarities and differences in your own family. What did you learn? How might understanding your own family be useful (or not useful) to a wider understanding of the nuances of family technology use?

Karraker (Chapter 3, in Breuss, 2015) talks about the families we don't see when we consider family technology use. Who are those families? Are they homeless? Migrant families? Mothers fleeing domestic violence? What might their unseen technology needs or uses be? How can we, as family professionals and advocates, better identify and understand their uses and needs?

Walker et al. (2011) identified 9 types of parent technology use based on device ownership, frequency of use of applications, and attitudes toward technology. This was adopted from similar research done with a general population of adults by John Horrigan and associates at the Pew Internet and American Life Project.

1. Why is it useful (or not useful) to see parents as a range of user "types"? What does it mean for family professionals who are employing or designing technology applications for work with families?
2. Why was it necessary to look at adult *parents* when work with adults had already been done? How are parents different from the general adult population with regard to their roles and technology use?

3.5 ADDITIONAL RESOURCES & READINGS

Ongoing Research on Demographic Trends in Technology and the Internet (often inclusive of children and families and family issues):

- Pew Research: https://www.pewresearch.org/topic/internet-technology/

Ongoing Research on Demographic Trends in Families

- Child Trends: https://www.childtrends.org/research-topic/families-and-parenting
  - See additional research topic areas including poverty and inequality,
- Kids Count: https://datacenter.kidscount.org
  - U.S. and state-, county-, and city-specific data on children and families across multiple dimensions.

Digital Divide and Internet Access

- Shapiro, E., 9/21/2020. These families feel forgotten as NYC opens schools (homeless families). *The New York Times*: https://nyti.ms/3bVZn51.
- Bowles, N., 10/26/2018. The digital gap between rich and poor kids is not what we expected. *The New York Times*: https://www.nytimes.com/2018/10/26/style/digital-divide-screens-schools.html
- Blandin on Broadband (Minnesota foundation on broadband access): https://blandinonbroadband.org/2021mnbroadband/
  - See 2021 Minnesota Broadband County Profiles — from Aitkin to Yellow Medicine.
- Kids Count data on household technology access 2019–2020 (with state-specific data available): https://datacenter.kidscount.org/data/tables/11144-households-in-which-internet-and-a-computer-to-digital-device-are-usually-or-always-available-to-children-for-educational-purposes

Technology and Families During Migration:

- Brief report for the United Nations Expert Group Meeting: Walker, S. (2022). https://www.un.org/development/desa/family/wp-content/uploads/sites/23/2022/08/Susan-Walker-Digital-Technologies-Interlinkages-with-Megatrends-and-Regional-Perspectives.pdf
    - Additional papers and presentations on families, migration, urbanization, and digital technologies: https://www.un.org/development/desa/dspd/2022egms/migration-urbanization.html
- McAuliffe, M. (Ed.) (2021). Research handbook on international migration and digital technology. UK: Edward Elgar. https://www.e-elgar.com/shop/gbp/research-handbook-on-international-migration-and-digital-technology-9781839100604.html

CHAPTER 4: TECHNOLOGY USE AND COUPLE RELATIONSHIPS

4.1 TECHNOLOGY USE AND COUPLE RELATIONSHIPS

But love is really more of an interactive process. It's about what we do not just what we feel. It's a verb, not a noun.

bell hooks

Chapter Insights

- ICT can facilitate communication, connection and intimacy in couples, yet it can also bring out tensions.
- Couples' use of technology can vary depending on aspects of the couple by member age, age or longevity of the relationships, and stage of the relationship. These couple differences play out in use of specific technology devices, applications, or functions (e.g., sexting, texting, dating apps, gaming).
- Couples differ in their perspectives about the impact of technology on the quality of their relationship.
- Cybersex is a part of couple intimacy, yet can feel for some or members of couples inappropriate.
- Dating apps and online sites are popular ways that couples initiate relationships, whether for a flirtatious hook-up or to seek a long-term partner. There are advantages and disadvantages toward finding a committed partner. There are potential negative impacts to individual well-being, to wider society.
- Accepted guidelines for healthy couple relationship dynamics (e.g., Gottman) can extend to ICT use.

- It's natural for couples to experience conflict related to technology. More important is how they resolve or prevent conflict as a demonstration of flexibility. Guidelines can be co-constructed for couples to remain cohesive in the face of technology-related conflict.
- Not surprisingly, technology is a tool for perpetrators of intimate partner violence. There are multiple ways that victims can be harassed with ICT. Professionals need to integrated technology into prevention and treatment strategies.
- After reading this chapter, identify what you feel inspired by, the questions that remain for you, and the steps you can take for your own technology use to be more intentional.

Introduction

The developmental exploration of ICT in the family begins with the beginning of families, or when couples first meet (Eichenberg, et al., 2017). It's not hard to see the many ways in which technology is used in couple initiation — meeting through dating apps; getting to know each other better through social media profiles and messaging, texting, and video conferencing. Whether a family consists only of the two people in the couple, or includes children or other subsystems, couples use ICT in significant ways that maintain the relationship and fulfill family functions. And they use multiple media in their connections, particularly social media and mobile technology.

The growth of research on couple technology use has led to new theories, and to theoretical adaptations of relationship dynamic models that capitalize on the specific affordances of communication through digital media. Use of ICT is now so prevalent in couple communication that the term POPC, for "permanently online, permanently connected" (Vorderer & Kohring, 2013) has been coined. These theories address not only new means for communication, but the wide variations in couples.

Use of ICT is now so prevalent in couple communication that the term POPC, for "permanently online, permanently connected" (Vorderer & Kohring, 2013) has been coined.

This chapter will explore ways in which the ages of members of couples, along with the status and length of the relationship, reveal differences in ICT use and impact. A significant portion of the chapter will focus on using technology during couple "initiation," specifically the use of dating apps and dating online.

Equally important is our examination of technology as a source of conflict in couple communication. To offer a personal example, when my partner goes to a store and texts me to see if we need anything, there's a good

chance I won't the text in time because my notifications are turned off. This results in his feeling frustrated. Obviously this won't prompt our heading to divorce court, but our shared use of texting for communication along with our different perceptions of how to use it together present a complexity we didn't experience before the advent of mobile phones. Conflict can be much more serious, particularly when technology is used to perpetuate intimate partner violence (IPV).

Background on Couple Relationships

Coupling can mean many things, and doesn't always refer to a serious relationship or commitment. For some, connecting might be a hook-up for sex, serial dating, or casual dating. For others it's part of seeking a relationship that leads to commitment and a bond that may be legal, cultural, and involve children or shared property.

In the U.S., the rate of marriage has declined from 10.0 individuals per 1,000 in 1986 to an all-time low of 5.1 in 2020. Americans are waiting until later in life to get married, if they marry at all, and "nontraditional" living arrangements are increasingly common. Seen most among Millennials, these changes are due to a variety of factors, including concerns about the economy, women's education (with women's advanced education and earning power, they are less dependent on a spouse), and seeing high rates of divorce among their parents' generation. In terms of finding a partner (for marriage or not), couples cite challenges with increased mobility, migration, dispersal of social networks, longer commutes, and the demands of work and school life.

Happy couple, by Funk Dooby. CC BY-SA 2.0

"Couple Talking Through Masks" by Amaury Laporte is licensed under CC BY-NC 2.0.

parents texting CC by Neil Cummings ND

"Black Couples are Beautilful lol !" by Khanelle Prod' Medias is licensed under CC BY-SA 2.0.

Healthy Couple Relationships

While there are myriad theories and perspectives on couple/marital relationships[1], for efficiency we'll focus on principles from two perspectives.

John Gottman's research[2] on sound couple relationships uses the analogy of a house, with trust and commitment as the "weight-bearing walls." At the foundation, the building of "love maps" is a process of getting to know each other, ideally better than others do. On the second "floor," partners share admiration and fondness for each other, each telling the other what they like about them. On Floor 3 they turn toward one another, not away. This includes knowing each other's cues for response and attending to them. On Floor 4, working on positive perspectives of each other and themselves in the relationship, partners offer compassion and understanding rather than criticism. Floor 5 involves managing conflict when it arises — accepting the partner's motives, discussing programs, and practicing self-soothing. On Floor 6 they make dreams come true for themselves, the other person, and the couple as a unit. And at the top, Floor 7 finds couples creating shared meanings through rituals, ceremonies, pet names, memories, and so on — things that identify the two people as a defined unit.

"TEDxVeniceBeach, John Gottman" by tedxvb is licensed under CC BY-NC-ND 2.0.

Gottman's principles easily relate to the discussion of family processes in Chapter 2. Communication aids in relationship processes, fulfillment of roles, and reinforcement of relationship structures, and over time, communication and connectivity aid in relational cohesion. Because the couple, like the family, is an open system, external influences (like the availability of a smartphone during face-to-face conversation) can facilitate conflict, so it is important for partners to show flexibility in adjusting to and accommodating each other's needs and keep focus on the relationship. Gottman's own institute offers online resources for couples, including a relationship "check-up."

Another perspective blends research, including Gottman's, to characterize couple relationship skills that are predictive of satisfaction and well-being. A review of the research identified skill areas (Futris et al., 2013)

1. Students may pull from resources in their courses on intimate relationships, family theory, couple and family therapy, contemporary families and couples, gender studies, and family sociology to apply to this chapter.
2. Readers are encouraged to explore the Gottman Institute site for information, training opportunities, and additional resources: www.gottman.com.

which were later were developed into an inventory of relationship quality: the Couple Skills Relationship Index [CSRI] (Adler-Baedler, et al., 2022).

The skill areas of the inventory include:

- **Self-Care** (originally titled Care for Self): efforts to promote individual health and well-being
- **Choose:** attitudes and efforts related to intentionality and prioritizing the relationship
- **Know:** attitudes and efforts that promote intimate knowledge between partners
- **Care:** attitudes and behaviors that promote other-oriented positivity
- **Share:** attitudes and behaviors that promote a sense of couple solidarity and "we-ness"
- **Manage:** attitudes and skills for managing stress and conflict
- **Connect:** attitudes and efforts to embed the couple relationship in support networks (Adler-Baedler, et al, 2022 p. 282)

None of the dimensions of the CSRI specify technology use. Yet each can be imagined as they would relate to use as an individual, in a couple, and through connections with others. Before reading on, consider at least one application of ICT use to each of these areas.

Jointly, these areas reflect a conceptual framework built on the foundation of a variety of social, ecological, and learning theories applied to couples, predictive of positive relationship quality (e.g., positive feelings, satisfaction, family harmony). Going forward, we'll explore how ICT is used to convey couple relational dynamics and influence relationship well-being.

As we explore research findings on this topic, a caveat. While significant research on couples and ICT has been completed by the time this book was written (2022), it remains limited. Not all forms of ICT have been studied nor studied to the same degree. Great focus, for example, has been given to dating apps and to texting as a process of communication, and less to videoconferencing, videogames, or virtual reality. Research samples struggle to reveal couple demographic or global diversity, though there is a certain presence of queer couples in published literature. Research on age and couple longevity tends to focus more on younger couples and those in the early throes of a relationship, look at those at the dissolution stage, and explore how ICT can help couples communicate and coordinate around the needs of their children. Couple research is thus ripe for more investigation, particularly as devices and platforms for engagement evolve (including virtual reality dating) and as we further understand potential security pitfalls and privacy threats from individual error (e.g., sharing information about a partner online they intended to keep quiet) and data mining. For the most recent research, readers are encouraged to do Google Scholar/EBSCO or other searches for specific topics, platforms, couple types, and processes of couple relationships.

Advancing Relational Theory with Regard to Digital Technologies

In Chapter 2, we noted that extant theories of family life can help us frame family processes that contribute to well-being, and examine internal and external influences on those processes in our current age of technology use. To be sure, the focus should be less on the descriptive use of ICT by families and more on what these tools and interactions mean to family dynamics and outcomes. Newer theories are being developed to adapt extant frameworks of the family to new technologies.

The Couple and Family Technological Framework (revisited)

Hertlein's research on the ways in which couples used technology identified benefits to relationship initiation and management, along with challenges such as distancing and ambiguity (Hertlein & Ancheta, 2014). This informed the family technological framework (Hertlein & Blumer, 2013) discussed in Chapter 2. Relationship communication via the "mediated affordances" of ICT (e.g., anonymity, access) can affect perception and understanding of relationships; couple conveyance of rules, roles, and boundaries; and couple relationships as a shifting structure (e.g., from initiation to maintenance). Hertlein's model has been used to examine a range of couple and family situations, including parenting, videogame playing by couples, and sexual infidelity. A cogent explanation of the 7As applied to sexual dysfunction is presented in Hertlein et al., 2017.

Relational Maintenance

Theories focused on interpersonal relationship dynamics abound in the literature on computer-mediated communication (CMC); many are discussed by Walther and Parks (2002). Some theories explore relationship components and ICT use, including relationship development, perception, and contexts for interaction. Mason and Carr (2022) present an excellent overview of the work to adapt relational theory to the realities of digital technology, and suggest elements to consider in using online technologies to maintain off-line relationships. As with Hertlein and Blumer's model, they evoke the characteristics and "mediated affordances" of ICT as actors in relational dynamics. With a foundation of social penetration theory (Altman & Taylor, 1973), which posits that the reciprocal exchange of information, processed by relational partners over time, helps progress closeness, **Mason and Carr describe six dimensions of digital communications that influence relationship maintenance:**

1. **Lightweight interactions:** Instant messaging and social network communication offer brief but frequent exchanges. Yet as the authors observe, given the social exposure and potential for miscommunication, they may come with a cost: "lightweight interactions may be capable of sustaining less developed relationships but understanding its role in more developed relationships might prove more complicated" (p. 250). And while those in close relationships may use multiple media (e.g., media multiplexity), there is evidence that the topic and quality of information across these devices is replicated.
2. **Nature of disclosures:** Methods of sharing online can be ephemeral (as in Instagram stories), and what is intimate seems up for interpretation. The overly social atmosphere of online spaces has led to the need to determine what information is personal and what is interpersonal.
3. **Mass personal spaces:** Conveying personal messages in wide social spaces can seem less intimate, given that they are on a platform shared by many, even when messaging is "private."
4. **Social presence:** the sense of being with another person even though they are not nearby. ICT modalities allow for sensory and text-based mechanisms for partners to feel the presence of the other.
5. **Ambient awareness** occurs when individuals receive messages broadcast by others. In a relationship, this allows for the passive observation of information about the other person. Viewing a partner interact frequently with another, for example, can lead to feelings of rejection.
6. **Algorithmic proximation:** As Mason and Carr (p. 257) succinctly observe, considering online interactions, "individuals in a particular relationship are not the only actors who may influence relational outcomes. Online information distribution and display are now substantively controlled by sophisticated algorithms."

These elements are observed in richer detail as some of the research on how ICT operates in couple relationships is discussed throughout the chapter.

Technology Use by Couples

Ed Yourdon. CC BY-NC-SA 2.0

With the majority of U.S. households having access to the internet and owning smartphones (U.S. Census, 2021), and rates particularly high in households with younger heads, in urban areas, and across all socioeconomic strata, texting is a key method of communication between couples. As with others motivated to use technology, couples cite efficiency, ease of use, and mobility (Nylander, et al., 2012). Calls and texts enable couples to express affection, forge intimacy, solve problems, and gather information. Couple duration, closeness, and familiarity with using cell phones as a communication device are predictors of positive and continued use. Social media is a mechanism for some couples to communicate about their relationship (Anderson & Vogels, 2020) and to learn more about potential partners. Videoconferencing, virtual reality, and augmented reality offer sensory mechanisms for greater presence. During COVID-19, the news ran a story about an elderly couple who kept in touch using FaceTime, as one resided in assisted living. Other uses of more sensory mechanisms of mediated communication include cybersex, or sex-related interactive behavior that includes viewing pornography, sexting, and web-cam sex.

In a qualitative analysis of college students, with about half in long-term relationships and others in casual relationships, Hertein and Ancheta (2014) identified themes in technology use by relationship initiation, management, and enhancement. Relationship management included technology for seeking information, managing conflict, reducing anxiety, and demonstrating commitment. Relationships were enhanced by using technology to spice up sexual relationships and stay connected when separated by distance.

If a researcher asked you if technology impacted your relationship, what would you say? Might you want the researcher to define what they mean by "impact"? In 2014 research by Pew (Lenhart & Duggan), couples viewed "impact" as something fairly significant, as only 10% of long-term couples (defined as those together for 10 years or more) reported that technology use had any impact, and that impact was positive, with many citing increased connectedness. Higher rates were found in younger age groups, with 21% of those age 18–29 reporting that technology had a major impact. A more recent study from Pew (Vogels & Anderson, 2020) also found little impact from

Technology's "impact" on couple relationships depends on the couple's perspective on what *impact* means.

couples viewing others' posting about their relationships on social media. Although 81% reported seeing what others post about their relationships, within that group most (81%) said it didn't make a difference in their own relationships, and another 9% said they felt better about their relationships.

There are downsides to using technology in couple relationships, of course. Misunderstandings and differences in use are common. Couples sometimes experience an imbalance, with one partner using a device or application in ways that don't include the other or to a greater extent than the other. Videogaming, viewing pornography, even "phubbing" — ignoring the partner while with them by focusing on a phone — can create conflict. Technology is sometimes also used to assert an imbalance of power — to a lesser degree, by choosing to hold difficult conversations (or even break up) online rather than in person, and in extreme cases when stalking, harassing, and withholding a partner's access to technology, as seen with intimate partner violence. The sections below will offer a closer view of couple use, misuse, and impacts.

Differences in couples

"Young and Old" permission from Marty Gabel CC by NC.

Like families, couples have a developmental trajectory and develop over time and in stages. Couple relationships can be defined by time (or length of the relationship) and by stage. Are the partners just meeting? Making a formal commitment? Transitioning to childrearing or another adult life stage, such as home shared ownership? They might be at the end of the relationship and experiencing formal separation or divorce. And couples vary by the age of the individuals. They might be teenagers, young adults, older adults, or seniors, the same age or different ages. And naturally, as with families and individuals, couples can be viewed by ethnicity, race, religion or culture, geolocation, age, gender, health status, education and income, and other demographics. These factors, along with the myriad other factors that influence individual use discussed we've so far, can influence how technology is used, how it is viewed as a tool in the relationship, and its impact on the well-being of the relationship.

By age of couple members

Younger couples use digital communication in relationships differently than older couples. Teenagers in relationships, for example, use technology for

Consider at least five different couples you know. How might they

communication and daily check-ins; they report that the immediacy of contact can enhance feelings of intimacy, and that delays can lead to negative feelings, especially when the partner is otherwise visible (Commonsense Media, 2015). They acknowledge that their use of technology in the relationship can breed possible miscommunication and discomfort from feelings of surveillance by the partner, feelings of jealousy, and the potential for boundaries to be blurred.

differ in how each individual in the couple uses ICT in couple communication and relational maintenance? How do or might they differ as couples?

Though only just over a quarter (28%) of adults who use social media use it to share about their relationships, frequencies vary greatly by age. Nearly half (48%) of adults 18–29 years indicate that it is important to show how much they care about their partner, compared to 10% of those 50 and older. Younger social media users say it is a way to publicly demonstrate affection for their partner, and be aware of their partner's life (Anderson & Vogels, 2020). Interestingly, non-white couples and LGBT couples are more likely than white and straight couples, respectively, to use social media in this way. Those who are younger are also more likely to see others' post about their relationships on social media. Compared with 91% of adults age 18–29, 75% of those 50–64 indicate seeing others post about relationships.

Younger adults using social media are also much more likely to check up on exes. While 53% of adults on average report using social media this way, the frequency reaches 70% among those age 18–29. Not surprisingly, a greater proportion of younger adults also report feeling jealous and unsure about their relationship due to their use of social media (34% vs approximately 16% of adults over 50).

By length of the relationship

Why might there may be differences for those who are together for a shorter amount of time? Might the age of the individuals in a couple be a confounding influence?

Long-term couples tend to view and utilize technology quite differently compared to those who have been together for a shorter period of time. In part this is due to couple member age — couples together for less time are more likely to be younger and are familiar with the use of technology for relationship logistics. Shorter-term couples may also be more sensitive to miscommunication prompted by online formats. Relationship length can moderate negative couple outcomes associated with frequency of Facebook use and Facebook-related conflict (Clayton et al., 2013). And longer-term couples may use technology together — sharing email or Facebook accounts — since they were together at the advent of the Internet and social media. Couples who have been together for less time reported feeling closer to the partner due to online or text messaging

conversations, they resolved an argument with the partner online or by texting, and they texted the partner while at home together.

By stage of relationship

More established couples use technology to communicate conveniently, seek information, manage conflicts, reduce anxiety, and demonstrate commitment (Hertlein & Anchleta, 2014). They also try to spice up their sexual relationships, and stay connected during distancing separations. The sharing of sensitive information such as passwords or accounts is a key difference by relationship status. Although the majority of couples in relationships indicate sharing a password for a cellphone (75%) or email account (62%), those who are married or living with a partner are far more likely to do so than those in committed relationships. In the case of email accounts, for instance, 70% of those who are married share accounts, compared to 22% of those in relationships (Anderson & Vogels, 2020).

> Why is it more likely that those who are in longer-term relationships share online accounts? Today it is also likely that passwords to streaming services such as Netflix or Hulu are shared. Are there differences between sharing these kinds of accounts and sharing social media, banking, or email accounts?

Divorced and separated couples (with children)

Beyond the use of technology to file for divorce (Eichenberg, et al., 2017), or apps to help newly solo parents manage practical challenges after the divorce, technology and communication between separated and divorced couples is a dominant focus for family professionals. Research examines differences in what is used, how, and by whom, e.g., texting, email, and social media (Dworkin, et al., 2016; Russell, et al., 2021, Smyth, et al., 2020). Russell et al. (2021) identified a typology of mediated communication in post-divorce couples with minor children: those extensively using multiple media, those who mixed face-to-face communication with phone calls or texting, minimal communicators relying largely on texting, and very limited communicators using occasional texting. The selection of type of media, frequency, and use relative to desired intent varies. Couples may, for example choose email for more lengthy communication, to share documents, and in cases of conflict (Ganong, et al., 2012), and choose asynchronous forms of communication. Divorced parents may also be more likely to use technology to communicate with and through their children rather than directly communicating with the co-parent (Dworkin, et al., 2016).

In Russell et al.'s (2021) research, divorced couples who use multiple methods of communication were more likely to rateas cooperative partners, while those using more limited methods, and who had limited contact, rated higher as "dissolved duos" or "angry associates." This reinforces Ganong et al.'s (2012) early conclusion that use and quality of communication in couples post-divorce is dependent on relationship quality (amicable or contentious). Social presence theory may account for the differences in technology selection, with more adversarial couples choosing to be less present through digital media. In tracking high-conflict Australian couples post-divorce over a five year period, however, Smyth et al. (2020) found shifts in technology use, including the use of multiple media, synchronous and asynchronous methods with ex-spouses, and shifts in frequency and intimacy. They questioned whether technology selection in divorced and separated couples may be less static than previously understood.

"Broken Love and Trust" by Jangra Works is licensed under CC BY 2.0.

From a legal standpoint, couples may be wary about how they communicate, as digital communication can be archived, retrieved, and used in litigation.

Some divorcing/divorced couples use technology used in adversarial ways. Text messages, apps, and social media accounts are used in evidence in divorce cases. At least one family law firm offers a guide for digital communication and divorce. In many states, post-divorce couples education is mandatory; hopefully it addresses the use of technology in partner and child communication. Some states, such as Texas, require divorced couples to use particular apps to pay child custody or communicate with the partner and children, but non-compliance appears to be an issue.

Video Watching, Gaming, and Cybersex

In addition to texting and the use of social media, technology is used by couples (or by one member of the couple, influencing the other) in additional ways that have an impact on the relationship. This includes watching videos, videogaming, and participating in some version of cybersex, which can include sexting, viewing pornography, or webcam or AR/VR sex. Interestingly, most of these activities are ones couples report doing in their bedrooms — a location with sociocultural importance to intimacy and privacy (Salmela et al., 2019). As with more generic uses of technology for communication in couples, these applications bring both

benefits and challenges to the relationship. Gaming, for example, can generate closeness through the sharing of an activity, yet it can generate conflict when one partner is into gaming and the other is not. And sexting can offer a specific type of intimacy, yet have ramifications when used improperly (e.g., as underage pornography, as infidelity).

As with more generic uses of technology for communication in couples, watching videos, gaming and forms of cybersex applications bring both benefits and challenges to the relationship.

Video watching

Just as when families co-view media together (Padilla-Walker et al., 2012), couples can feel a greater sense of connectedness and cohesion when they watch TV, movies, and videos together. (NOTE: This isn't to be confused with "Netflix and chill." Today the phrase is more of an analogy for having sex.) Recently, viewing videos on TikTok has become a shared activity for couples. Co-viewing media can involve watching together in person, co-viewing separately but at the same time, and viewing common media and texting about it or posting to a social media account the other person follows closely.

This piece in the popular press cites a psychologist's take on making a long distance relationship work as a "TikTok" couple. While research isn't cited, the conclusions are reasonable given research on couple emotional contagion, social connectedness, and cohesion (Zilich, 2020). Sharing the platform may put couple members in a good mood and/or lower stress levels, give them a cooperative task that allows them to problem solve and create a joint project (such as doing a "Flipped the Switch" dance video), share an emotional experience (and talk about it), and take a break from their usual routine. This might be especially valuable during long periods of time under restriction, such as COVID-19 or bad weather.

Gaming

"20081011 – AnimeUSA – 170-7002-diptych-170-7005 – Carolyn, Clint, Sonic" by Claire CJS is licensed under CC BY-NC-SA 2.0.

Gaming can be a source of connection, allowing partners to share an interest and a source of intimacy. According to the Entertainment Software Association (ESA), in 2021, 42% of videogame players played with a spouse or partner; another 23% reported meeting their spouse or partner through playing videogames. Giving its popularity and accessibility, gaming might be a way for adults with a disability to make connections with others with shared interests. During COVID-19, videogames were especially popular with couples during the long months of quarantine. While most (57%) use a smartphone or a gaming device (46%), those using a smartphone are more likely to play casual games like Tetris, whereas those on devices will play action games. As we'll discuss in Chapter 9, videogames are also popular with families, and as a way for parents to monitor their children's online time and to model safe use.

For most couples, game playing has a neutral effect on the relationship (Coyne et al., 2012). Challenges are possible when one partner's time playing upsets the other's expectations for time spent together. Some couples experience conflict over the time spent by one member, particularly if it means exposure to others who present a threat to the relationship. In some cases, partners identify aggression brought out by gaming as a source of conflict in the relationship.

Smith (2012), in research on attachment behaviors in committed couples based on perceptions of partners' videogame use, reports that the male's violent videogame use and the female's nonviolent videogame use predicted the perception and that videogames were a problem in the relationship, and this perception predicted less attachment behaviors, which was a fully mediated relationship for both. The female's view that videogames were a problem negatively predicted both her and her partner's attachment behaviors, while the male's view only predicted his attachment behaviors.

Cybersex: Sexting/Cybersex and Pornography

Online sexual activity can influence the couple relationship. When conducted together, online sexual interactions — whether exchanging sexts or viewing online pornography together — enables couples, sometimes geographically separated, to experience greater intimacy in their relationship. Necessary distancing during COVID-19, and concerns about the transmission of disease including sexually transmitted disease, led

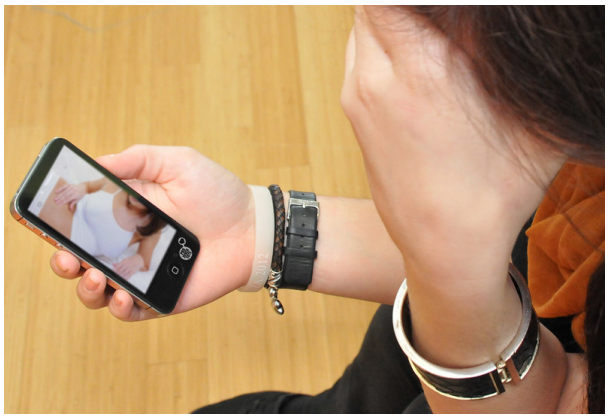
the International Society for the Study of Women's Sexual Health (2020) to state, "The new 'really safe' sex in many cases may require 'e-sex.'"

Definitions of cybersex vary widely. Beyond sexting, the exchange of sex-related materials, and viewing pornography alone and as a couple, it can also mean use of augmented reality or VR, and of sex-robotics, anticipated to be a future trend (Döring 2017). A review of TMSI (technology-mediated sexual interaction) by Courtice and Shauggnessey (2017) indicates that research in this area tends toward the negative (e.g., cybersex addiction) rather than taking a more neutral approach to studying the behavior. A small portion of individuals develop cybersex addiction (Giordano & Cashwell, 2017, suggest 10%), yet Eichenberg et al. (2017) observe that much of the research is self-reported and that many using the internet for sex don't see their use as a problem, so accuracy in prevalence is hard to gauge. And critical consensus of the research finds it lacking (Banerjee & Rao, 2021; Courtice & Saughnessey, 2017). Banerjee and Rao (2021, p. 7) observe:

> Besides cross-cultural and cross-country, research should focus on cultural effects on virtual sexuality and effects of cybersex on psychosexual health. Longitudinal mixed-method studies and exploring lived experiences related to partnered and solo sex are essential to formulate policies and guidelines that can be rooted within the participant perceptions.
>
> Because if we are moving toward more than increasing our understanding of family life through research, to practice and policy, including requirements around consent between couples, it is essential that the work be both rigorous and representative of the phenomenon as facilitated by cyber-technology.

Sexting

While sexting — sending sexually provocative texting or images via digital technology — is not an activity that the majority of couples participate, it represents normative couple behavior and intimacy and is present in a significant minority. Research with 615 demographically representative couples in the U.S. and Canada revealed that most (71%) didn't sext, 14.5% were "word" sexters, and 14% were frequent or hypersexters (Galovin, et al., 2018). In that study, sexters were more likely to be younger (though older than adolescents) and homosexual, and to use media and view pornography. Pew research in 2014 similarly revealed sexting in younger age groups. Those between 18–24 were most likely (44% of the subsample) to receive sexts, whereas those 25–34 were most likely (22% of the subsample) to send sexts. That said, occasional reports in the media single out individuals such as Anthony Weiner, a former New York



"Pro Juventute Aufklärungskampagne ‚Sexting' Themenbild_09" by Pro Juventute is licensed under CC BY 2.0.

congressperson who was given 21 months in jail for sending sexts to a 15-year-old, or cases of a school teacher or coach. Sexting is also related to couple duration and stage. Those more likely to receive sexts are those who are single, those not in a relationship or those whose relationship is 10 years or less.

A meta-analysis of sexting research (Kosenko et al., 2017) found a positive relationship between sexting and sexual activity, having unprotected sex, and number of sexual partners. Galovin et al. (2018) determined that relationship satisfaction among sexters wasn't significantly different from non-sexters, though they were more likely to express sexual satisfaction in the relationship. Other relationship variables for sexters were less positive, in measurements of commitment, ambivalence, and conflict.

Still, partner context appears to matter greatly. Those in trusting, safe relationships (whether gay or straight) may have a different sexting experience than others. And Courtice and Shaughnessey (2017) indicate that relationship impact research is so variable that it's difficult to offer firm conclusions.

One aspect of sexting that is not variable is the existence of state pornography laws. Each state has laws around sexting, particularly around sending or receiving messages to a minor or a person under the age of 18. These laws can catch individuals unaware; for example, an 18-year-old sending a picture of a 16-year-old is considered pornography. Non-exclusive factors that determine if "a visual depiction of a minor constitutes a 'lascivious exhibition of the genitals or pubic area'" under 18 US Code §2255(2) (E),4 the definitions section of the statutory scheme (Id. at 830)," include:

1. whether the focal point of the visual depiction is on the child's genitalia or pubic area;
2. whether the setting of the visual depiction is sexually suggestive (i.e., in a place or pose generally associated with sexual activity);
3. whether the child is depicted in an unnatural pose, or in inappropriate attire, considering the age of the child;
4. whether the child is fully or partially clothed or nude;
5. whether the visual depiction suggests sexual coyness or a willingness to engage in sexual activity; and
6. whether the visual depiction is intended or designed to elicit a sexual response in the viewer (Id. at 832). (Strassberger, et al, 2019).

It is essential that teenagers and those who may be in relationships with teenagers are acutely aware of state laws regarding the sending of sexts to underage minors. Sexting and adolescents is discussed further in chapter 5.

Viewing pornography

Pornography viewing is another mechanism for potential couple satisfaction, particularly as it might enhance foreplay. The internet makes it easy to find just about any type of porn, while also ensuring certain anonymity. It's reported that 25% of all internet searches relate to pornography, as do 35% of all internet downloads. Yet viewing pornography may also lead to conflict, particularly when one partner views it in the absence of the other (Gingrich, 2017).

Men are more likely to view porn than women. A study from the Wheatley Institute examined heterosexual individuals and paired couples in committed relationships, (defined as seriously dating, cohabiting, or married; Willoughby et al., 2021). There were clear gender differences about viewing hard-core pornography (defined as featuring depictions of actual sex acts that display full nudity), with men either married or never married reporting nearly double the frequency as women. Married (51%) and dating (36%) women reported never viewing pornography at higher rates than men. Younger men (under 30) were also more likely to view pornography. Other research supports these gender differences in pornography viewing in couples. Unmarried men and women in couples report viewing porn at about the same frequency. It's interesting that men and women aren't very good at estimating what the other does. Whether it's viewing hard-core or soft-core porn, women underestimate the percentage of men who view it, and men overestimate rates of women as viewers.

Across all gender and couple status groups, attitudes toward viewing pornography were positive in the Wheatley study for the majority (about 80%), particularly when asked about viewing as adults (whether married or unmarried). Far fewer individuals were positive about teenagers viewing porn. More men than women also saw viewing porn as helping foreplay (50–60%, depending on couple status, compared to 40–50%).

Does viewing pornography introduce conflict to the couple? Or might it positively contribute to couple intimacy, particularly since sexual satisfaction is a component of a happy relationship? Reviews of the research show mixed results (Webster, 2022). There is evidence that supports that viewing pornography together positively contributes to couple satisfaction. In the Wheatley study, couples who did not view pornography had high ratings on measures of stability, commitment and relationship satisfaction. Ratings were positive yet lower in couples who did view pornography, and lowest for those who did not view it together and when porn viewing by a partner was frequent. Sexual satisfaction was rated similarly whether or not couples viewed porn.

In the Wheatley study, about 20% of couples said viewing pornography contributed to conflict. Men may

hide their viewing (identified in about 25% of the sample), a partner's viewing may bring out insecurities in the other, or viewing may signal that there are issues in the relationship that are not being discussed. Webster (2022) observes that couples in conflict may turn to pornography as a way to avoid conflict. On the data that correlates viewing with marital dissatisfaction, Webster (2022) and Gingrich (2017) observe research limits identifying the direction of the relationship: do those who have poor relationships turn to porn, or does viewing porn contribute to poor relationships? Considering homosexual and heterosexual couples, couple impact of partner viewing of pornography (the man in a heterosexual relationship) depends on context (Gingrich, 2017). Viewing porn can affect men's feelings of intimacy, sexual satisfaction, and perception of sexual freedom with partners when men have a positive level of partner disclosure. Attachment level also appears to matter. Men with insecure attachment may turn to viewing pornography as a way to disengage and avoid perceived challenges with partners.

In a 2021 US study, a minority of couples report that viewing pornography (alone or together) contributed to conflict.

Technology-Related Conflict and Resolution

While ICT can enhance communication efficiency and personal connectedness, it's clear that it can also produce conflict for couples. Consider a possible conflict that might arise between a couple. How might technology relate to that conflict, and how does it influence the couple's relationship? Whether it's looking at a partner's phone, checking on exes through social media, or feeling jealous or underconfident in the relationship based on the partner's social media use, younger adults are more likely than those in other age groups to report these challenges, as are those who are not married but in relationships. Hertlein and Ancheta (2014) identified themes in couple interference and technology that will be used to structure this section. The themes are validated by the work of other researchers exploring couples' technology use (e.g., Vaterlaus and Tulane's study of married couples, 2019).

Issues observed

Distancing

Messaging by text or by sext can seem impersonal to some, removing the individual's self and interest in the communication. Phubbing in couples (also labeled PPhubbing, or Partner Phubbing), a type of technoference (McDaniel & Coyne, 2016) has been widely studied. As indicated below, even among married

and committed couples, over half indicate that their partner is distracted by their phone. Nearly as many report feeling bothered by the amount of time spent on the phone.

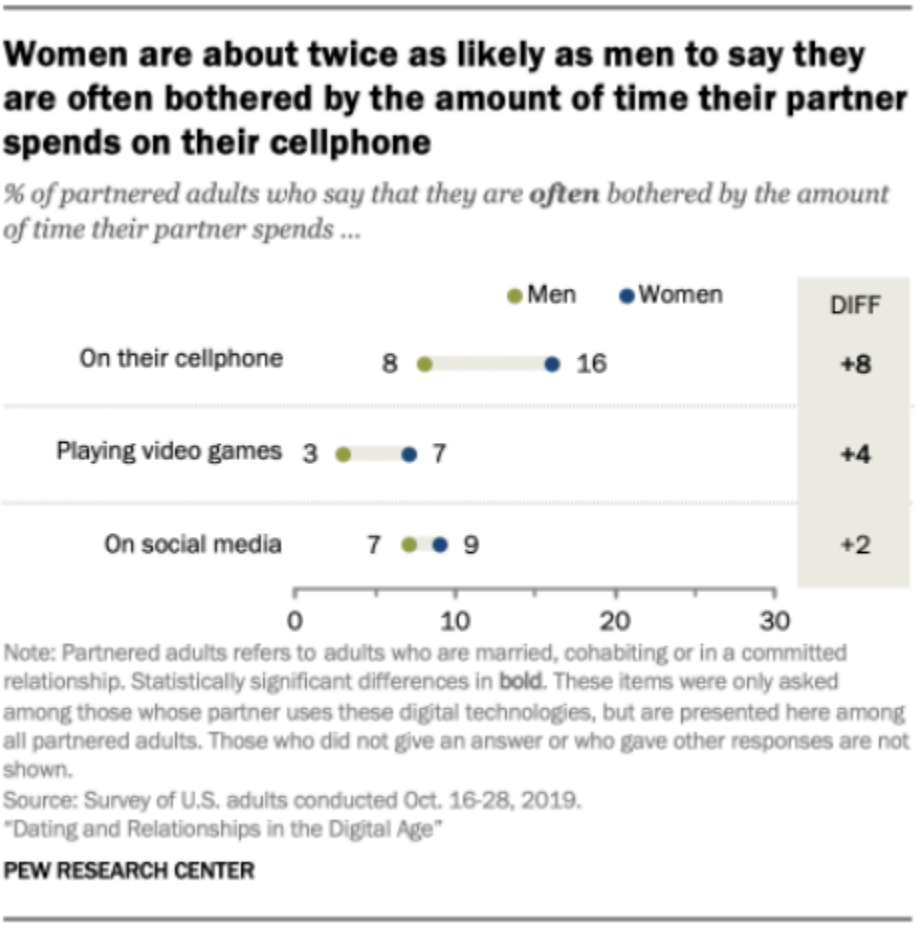
https://www.pewresearch.org/internet/2020/05/08/dating-and-relationships-in-the-digital-age/

Negative effects of phubbing in couples include perceived effects on intimacy, reduced relationship satisfaction, reduced sexual satisfaction, diminished sense of quality time, and effects on partner mental health. Wang et al. (2019) examined married couples in China and found that phubbing related to depression and negatively related to relationship satisfaction. There was also an indirect relationship to depression based on the impact on satisfaction, meaning that as a partner's satisfaction in the relationship decreased due to phubbing, they felt depressed.

Another study with married couples in China (Chen et al., 2022) looked at the transmissive effects of

phubbing, or one partner ignoring the other after they have been ignored. It is fairly common for couples to pick up each other's behavior due to their interdependence and time together. The Wang et al. study found that men were likely to start phubbing when their wives did it, but women were not. The authors observed that this could be an effect of gender role socialization. This study also validated the connection between phubbing and relationship satisfaction, but demonstrated that lower satisfaction was an influence on phubbing.

Women in the U.S. are more bothered than men by being ignored. While percentages are rather low overall (16% being the highest of all groups), for all media — phones, social media, and videogames — women are more likely to report feeling dissatisfied when their partners are on these devices.



https://www.pewresearch.org/internet/2020/05/08/dating-and-relationships-in-the-digital-age/

Long-term German couples, ranging in age from 29–72 and averaging 22 years together, were studied for personal (attachment anxiety), gender, and relationship influences on phubbing (Bröning & Wartberg, 2022). The behavior was more likely in younger couples. Authors interpreted this as the long-term couples being

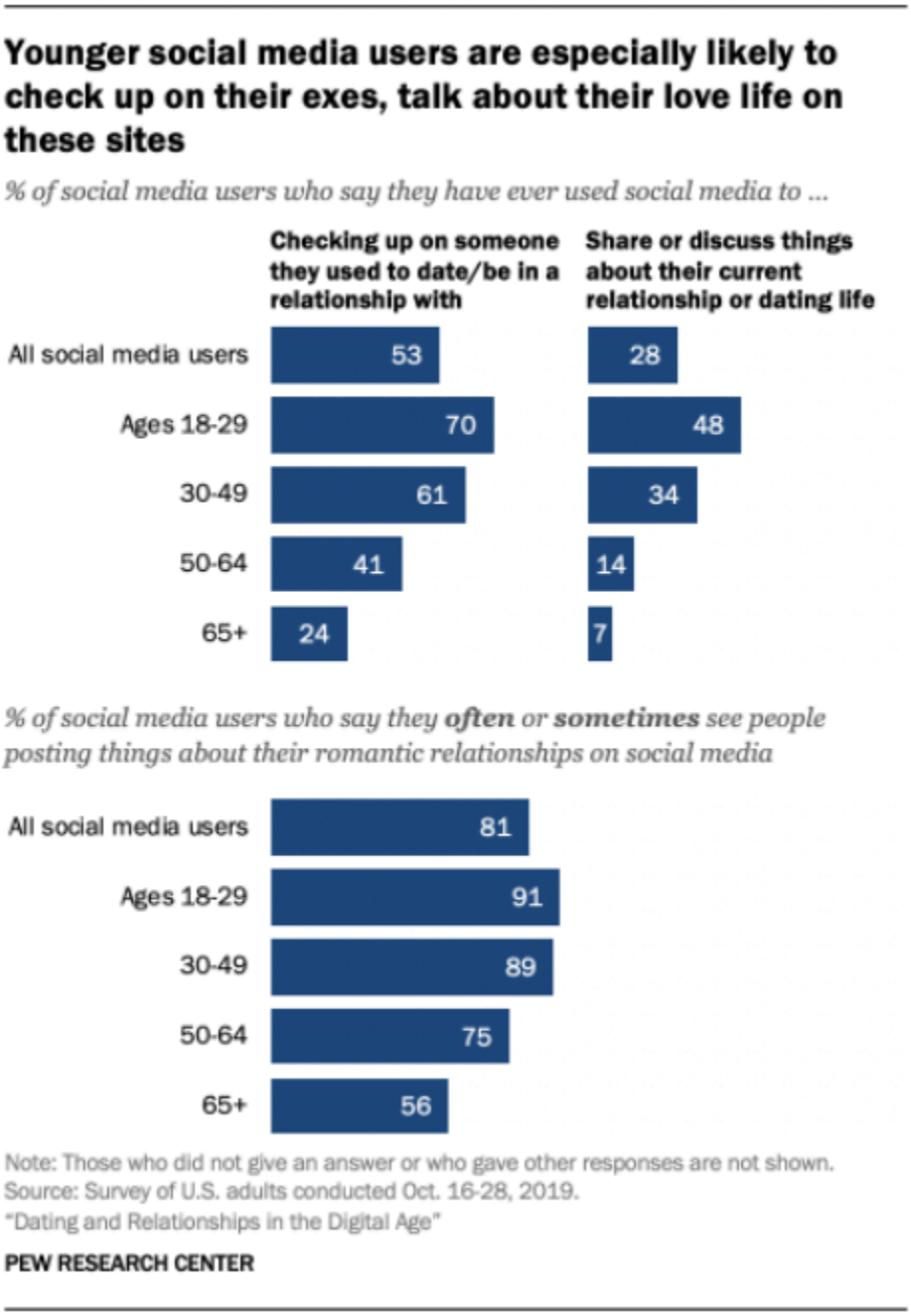
stable in their relationships, communication, and coping and conflict resolution patterns. Attachment orientation was highly correlated with phubbing perceptions. In other words, long-term couples that have developed an increased sensitivity toward each other due to an insecure attachment orientation may perceive phubbing as more damaging to the quality of the relationship.

Couples can also avoid issues by focusing on their phones, or address challenging topics by asynchronous text rather than having a face-to-face conversation. Even having a phone out while spending time together can feel like a distraction and interfere with the feelings of intimacy (Turkel, 2015).

Impaired trust/Breaking boundaries

Couples indicate that it's easy for their partners to hide texts or sexts to others, and to hide online activity, including social media (e.g., following an "ex"). This can create concerns over infidelity, also called "digital jealousy" (Eichenberg, et al., 2017). It should be noted, however, that definitions of infidelity using the internet are somewhat "messy," to use Vossler's (2016) term. Some common factors include attempts toward privacy, using access and anonymity features of the internet, and abrupt discovery. Vossler's review suggests that couple impacts of cyber-infidelity are similar to those from infidelity offline: partner distrust, relationship conflict, and potential dissolution.

Couples, especially younger ones, may use social media to gather information about their partner's activities. And as social media is a popular way to check up on exes, knowing this can lead existing partners to feel jealous or suspicious.



https://www.pewresearch.org/internet/2020/05/08/dating-and-relationships-in-the-digital-age/pi_2020-05-08_dating-digital-age_00-02/

Looking at a partner's phone or social media account can break boundaries, and doing so without permission is a sure way to damage trust. Regardless of age, commitment status, or other demographics, nearly ¾ of couples (71%) agree that it is not appropriate for a partner to look through another partner's phone without their knowledge. Still, one-third (34%) of couples admit to doing so (Anderson & Vogels, 2020).

Lack of clarity

The final area of challenge for couples is lack of clarity. As we've discussed, users vary widely in their access, attitudes, comfort, and skill related to technology. One partner, for example, may spend more time on their phone and frequent social media, while the other tries to avoid social media all together. Differences in texting patterns, especially, can contribute to miscommunication. When a message isn't returned, or is returned late or with an ambiguous wording, a partner can question the motivation or misinterpret the message (Vaterlaus & Tulane, 2019). Ambiguity in text messages is a common issue, as is the use of emojis (Miller et al., 2017). When couples get into significant issues through texting (e.g., confrontations, apologies), one or more members can feel uncomfortable (Novak et al., 2016).

Talking about it

Most couples don't discuss social media use as a possible relationship issue, though individual partners may have implicit rules that need to be discussed. Digital jealousy appears not to be medium-specific, and is dependent on individual couple perception of cheating (Eichenberg, et al., 2017). Interview research with committed couples regarding technology use as integrated into daily life offered a process model of how boundaries and rules are negotiated (the definition of "committed" was left up to the couples; no time length or status marker was supplied by the researchers; Pickens & Whiting, 2019; Cravens & Whiting, 2015). The authors suggested that professionals, understanding this process, can offer suggestions to help couples with conflict resolution.

- **Step one:** *identify* the online issue, including past issues or inappropriate behaviors
- **Step two:** *appraise* the online issue, implicit rules, explicit rules, and rule consensus
- **Step three:** *discuss* the online issue, providing evidence, justifying the behavior, or explaining the perspective
- **Step four:** achieve resolution for monitoring and successful communication, or explore consequences that might lead to breaking up

Couples might want to ask:

- Are there any websites that you believe would be inappropriate for me to visit?
- When I use a social media site, are there groups of users or specific people with whom you would be uncomfortable with me interacting?

- Is there any information you feel should or should not be posted online about me you or our relationship?
- Do you consider pornography to be a violation of our relationship?

Couples therapist Veronica Marin (2017) offered the following relationship tips:

1. Make your partner feel more important than your phone, spending at least 20 minutes a day of screen-free time together.
2. Check in before posting anything about the relationship.
3. Set expectations for texting.
4. Comment online as though in real life.
5. Don't snoop on a partner's behavior; give your partner the benefit of the doubt when, for example, they're friending an ex.
6. Address discomfort quickly. If a a partner is snooping or microcheating, discuss reasons rationally.

Serious conflict: Intimate Partner Violence and technology

Cyberstalking, psychological abuse, technology restriction, and technology-facilitated sexual violence are forms of intimate partner violence with technology, or tIPV (Duerkson et al., 2019). Cyberstalking can include sending threatening messages, selling or purchasing items online in the victim's name, pretending to be someone to communicate with the victim, and creating a webpage or advertisement with the victim's information (Eichenberg et al., 2017). This can cause isolation, humiliation, and fear. Affordances of the internet, texting, and social media enhance the cyberstalkers' ability to track others and access user preference data, and provide anonymity. Using multiple media in stalking creates the sense of what Woodlock (2016) calls "perpetrator omnipresence. (p. 592)" Online stalking can continue for long periods, and the ability to separate from stalker contact is challenging for victims.

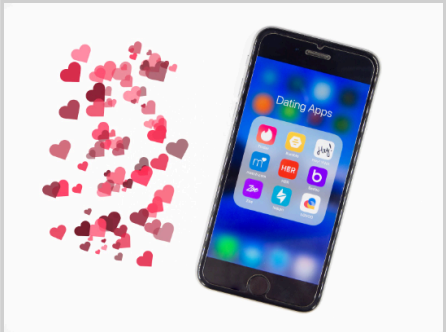
Cyberstalking can include sending threatening messages, selling or purchasing items online in the victim's name, pretending to be someone to communicate with the victim, and creating a webpage or advertisement with the victim's information. Using multiple media in stalking creates the sense of what Woodlock (2016) calls "perpetrator omnipresence" (p. 592)."

tIPV is prevalent among victims of intimate partner violence. A review of records from survivors of IPV between 2012 and 2016 revealed that 60–63% indicated technology-related abuse (Messing et al., 2020). Yet tIPV is also not clearly or consistently defined, and domestic abuse agencies may not yet recognize the power or potential of technology to produce consequences to the victims similar to those that take occur IRL. Assessing technology-based abuse, Messing et al. asked: "Has your partner used technology or social media to monitor your interactions with other people?" and "Has your partner used technology or social media to monitor your whereabouts?" and in a separate sampling, "Has your abusive partner used technology to harass, stalk, impersonate, watch over or threaten you?" While their quantitative analysis offered statistics, their qualitative analysis illustrated the subjective nature of online behavior that can muddy the ability to assess it. For example, some may refer to monitoring as stalking, while others relate it to a neutral or loving motivation (e.g., ensuring safety after a drive in dangerous conditions).

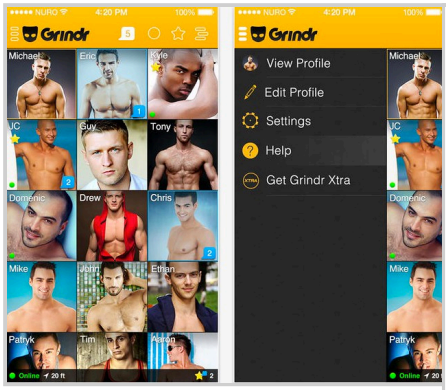
In a survey of Canadian college students, Duerksen et al. (2021) looked at predictors of tIPV. Social media was more prevalent as a medium for perpetrating violence, as it offered more ways to harass a victim, although it is also riskier in that it's more public. The researchers also found that in-person harassment and technological disinhibition were predictors of tIPV. The authors suggested that rather than technology creating more aggressors, it gives those with the propensity to stalk and harass additional means, particularly those comfortable with using technology.

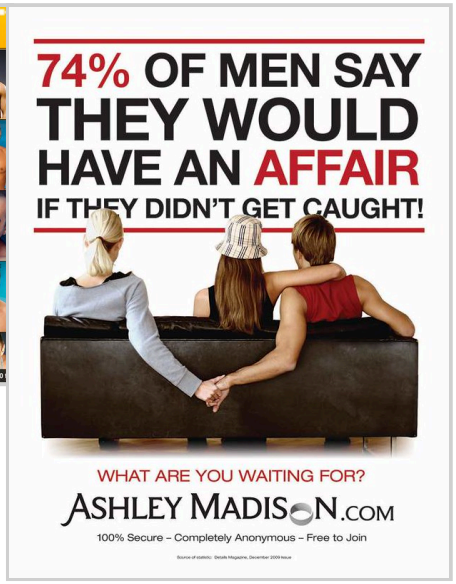
The prevalence and likely increase in the use of technology for IPV requires that agencies and professionals working in this area integrate ICT in their strategies for prevention and treatment. The Canadian government includes technology-facilitated violence in its list of types of IPV. Others also offer guidance. As Woodlock (2017, p. 399) observes, "If women are to use mobile technologies safely, technology-facilitated stalking needs to be treated as a serious offense, and effective practice, policy, and legal responses must be developed to address the use of technology as a tactic for abuse."

Dating Apps and Online Dating Sites



"Dating Apps On Mobile Phone" by Norma Dorothy. CC BY 2.0





People have long sought assistance in finding a romantic partner (Schwartz & Pellotta, 2018). Family and religious institutions have played matchmaker, and arranged marriages continue in some cultures and are even popularized as reality television (see, for example, Netflix's Indian Matchmaking). Friends offered introductions, and clubs or religious gatherings were convenient ways to find and vet partners. Adventurous seekers used to place personal ads in print newspapers (e.g., "single white female ISO single mixed-raced male"). In the 1980s, video cassette recorders (VCRs) enabled videodating, with people recording personal ads.

> Did technology facilitate the initiation of one of your relationships? How did it help? Did it present any challenges?

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://open.lib.umn.edu/technologyfamily/?p=600#oembed-1

Early research indicated that online technologies facilitated couple connections through shared interests (such as through virtual gaming; these are naturally forming connections), networked friends (networked relationships), intentionally sought relationships (targeted relationships), and digitally assisted relationship initiation, such as meeting in person then continuing online/through text (Sprecher, 2009). With the advent

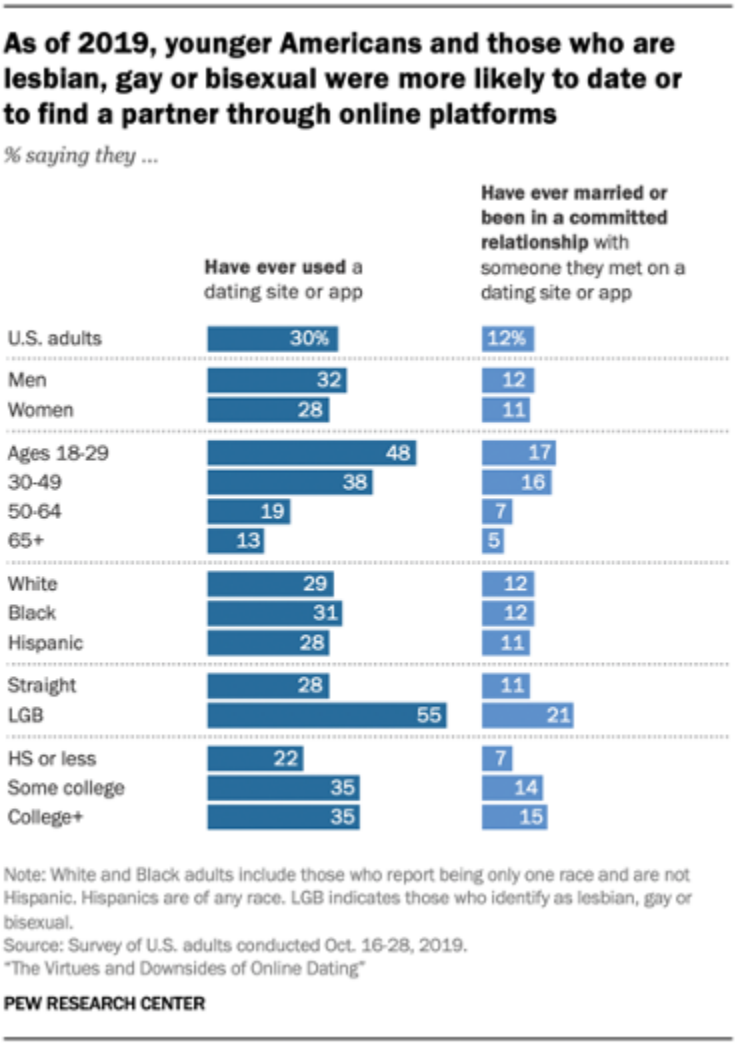
of the internet and social media, sites such as eHarmony and match.com and matchmaking services like It's Just Lunch offered efficient and somewhat tailored connections to others. And Grindr, an app for gay men, streamlined mate selection among the early dating apps developed around 2009 (Schwartz & Pelotta, 2018).

Eichenberg et al. (2017) identify different formats for finding dates online (p. 250):

> (1) single exchanges where flirt contacts dominate,
>
> (2) partner exchanges which correspond most closely to the traditional contact advertisement,
>
> (3) erotic dating/casual dating portals that aim to provide non-binding sex contacts,
>
> (4) niche providers, i.e., specialized platforms with the objective of connecting people with specific interests and preferences, and
>
> (5) social dating (e.g. Tinder), usually operated via smartphone, and including the special feature of users having the opportunity to display contacts in their immediate proximity.

As evident in this chart from Pew Research[3] (Anderson et al., 2020), 30% of U.S. adults, and 52% of those who have never been married, report ever using a dating app or site. There is greater use by those who are younger, correlating to exposure to dating apps and culture of use among peers. The median age of those using a dating site was 38; compared to 29 among those using a dating app. And as indicated below, LGBT adults were nearly twice as likely to report ever using a dating app or site.

3. Readers are encouraged to visit the full report from Pew Research, which provides an array of statistics on perceptions and experiences with dating apps in the US.



https://www.pewresearch.org/internet/2020/02/06/the-virtues-and-downsides-of-online-dating/

There are other ways of finding dating partners online, of course, including using social media to get information about someone or to ask someone for a date. Not surprisingly, social media is more popular with teens, who say they show interest by "friending" or "liking" a post or by sharing, though this is now likely to occur through more popular platforms like Instagram and TikTok.

With the growing frustration with dating in the 21st century (at least according to this report), do these apps help? They've seemed to enter the public perception as an option for finding dates, with reactions widely varied as to whether they have a positive or negative effect (Anderson et al., 2020). Perceptions of their safety vary as well, though those who voice more concern have never used a dating app.

Reasons for use

The major reasons that people use online dating include meeting those who share similar interests or hobbies, meeting people who share beliefs and values, finding someone for a longterm relationship or marriage, having a schedule that makes it hard to meet interesting people in other ways, or meeting people who just want to have fun without being in a serious relationship (Eichenberg, et al., 2017). COVID-19 and its imposed isolation made finding dates a particular challenge.

Online platforms can help users overcome barriers in relationship initiation. These may be physical barriers such as geographic proximity, or psychosocial barriers such as shyness. Asynchronous conversation can give individuals time to prepare a response, and can accommodate those with different schedules. Online initiation also enables a presentation of self in ways that minimize "gating features" (McKenna et al., 2002) such as physical appearance or voice quality that affect initial impressions. Although dating sites and applications include features that approximate reality through photos, videos, and videoconferencing, at each step of the relationship formation process, individuals have agency over the degree of personal information they divulge.

Online sites may be more effective for those seeking others in "thin markets," or niche markets (Scwartz & Pelotta, 2018), or seeking those harder to find in real life. For example, if someone lives in a rural area and is looking for an LGBTQ partner, it may be easier to find that person through an online site. Online sites may also be more effective from a safety standpoint. In the above example, online sites are often safer, especially in rural communities, as in-person encounters may be met with a hate crime.

Though dating apps can be efficient and offer control, there is a heavy need for self-branding and self commodification (Hobbs et al., 2017). Indeed, Bauman (2013) argues that the security of relationships has been compromised by technological change, specifically in the way that our use of the internet and digital technologies has created a game of commodification — or the selling and packaging of the self. For some, this type of exposure can ultimately be harmful to that self. Dating apps can also introduce possible miscommunication, misrepresentations, and damage to new relationships or to an individual. [4]

4. Misrepresentations through dating apps have become fodder for social media, the news, and reality programming. Examples include "Catfish" and "The Tinder Swindler."

Finding happiness

Are dating apps effective? Just as we might have to define the "impact" of technology on a relationship, so too might we need to define "effective" with regard to dating apps. If someone is looking to meet someone for casual dating, or for a "hook-up," effectiveness is far different than for someone looking for a long-term, committed relationship. And while the personal dimension of effectiveness may relate to perceived success in matching, the mechanics of dating app effectiveness (e.g., algorithms for matching, software programming code) are a behind-the-scenes consideration.

Consider Hertlein and Blumer's couple and family technological framework, discussed in Chapter 2. How might dating apps and online sites exploit the 7A's: accessibility, affordability, anonymity, acceptability, approximation, ambiguity and accommodation? How might experiences with dating apps affect relationship processes, such as initiation maintenance, that lead to commitment and intimacy? Would they affect a change in structure through a redefinition of rules, boundaries around the couple's system, or roles?

Satisfaction

In debates held in the undergraduate classes that informed this book, many agreed that initial and sustained connections taking place online are very similar to those ocurring offline: two people meet each other through a conveyance that offers filtering — through friends, at a known neighborhood bar, activities, through an online service that provides information. In nearly all classes, students offered evidence of marriages resulting from the use of dating apps (including students' mothers or fathers in second marriages), and satisfaction with the outcome depending on intention.

In Pew's 2019 research, the majority (61–71%) of those using dating apps reported positively that the apps help in finding someone who is physically attractive, has shared interests, that they wanted to meet in person, and who shared their ideas for a relationship (Anderson, et al., 2020). Within these numbers there were differences by gender (e.g., men finding it harder to find someone who shared their interests), and education (e.g., those with less education reported less success). Two-thirds (66%) of online daters have gone on a date with someone they met on sites, and 23% of online daters have entered into marriages or long-term relationships with someone they met. Older research following couples who met online indicates that their marriages or committed status relationships were as stable and happy as others. In one study, online couples married sooner after their first meeting, compared with others (Baker, 2004), and were positive about their futures together. In another, couples who met through social media, using networked connections, did not have a higher risk of divorce or separation than those who met offline (Hall, 2014). And in a third study from

a national survey in the U.S., couples who met online dated more and had a lower rate of separation than those meeting offline (Aditi, 2014).

In Hobbs et al.'s research (2017), daters said that while apps may be superficial, they're pleased when they are selected by another person. The majority said that apps gave them a feeling of control in finding partners, and 87% said it gave them more opportunity for finding partners by expanding the size and scope of their social network. Just over half (55%) reported that it helped them find a date or, for 25%, a sexual partner. Nevertheless, participants indicated that they would prefer face-to-face searching. Qualitative investigation within this study revealed that, for some, using the dating app had a therapeutic benefit. After experiencing a personal setback, the representation of the self they wanted to be offered validation and encouragement.

Satisfaction also appears to be related to understanding how apps work (i.e., how matches are made) and an awareness of digital data sharing. In Pew's 2019 research, just over half (58%) of those who used dating apps indicated knowing the realities of "match-making." (Turner & Anderson, 2020). The majority (69%) of those reporting positive experiences understood the matching process. They were more likely to report that using the apps had a mostly positive impact on their dating and relationships, which may or may not include believing in the effectiveness of the algorithm. Pepper Schwartz, a sociologist and academic who worked as a consultant on a dating app's creation (Scwartz & Pellotta, 2018), observes that "the majority of these sites offer no hard evidence to show that their algorithms can actually procure better dates, partners, marriages, sex lives, etc. than human judgment alone." (p. 62). Perhaps positive perception leans toward efficiencies in finding people and filtering a vast (or, in some cases, expanding a limited) pool.

How dating apps work

How companies' algorithms create matches is uncertain. Heilwell's reporting on the topic points to the artificial intelligence (AI) that uses data provided by the user, "likes" by the user, and "likes" about the user, in addition to data from add-on services (which helps make the apps free). Tinder incorporates data about use of the platform (location, activity), and platforms like Hinge track likelihood of exchanging phone numbers and satisfaction after dates. Heilwell also notes that data from other users of the app can inform who is matched with a singular user in something called "collaborative filtering."

Understanding how apps work may also involve seeing the gamification elements that keep them interesting. Bumble, for instance, makes matches disappear after 24 hours if they aren't contacted. Other game-like features include continuous scrolling, delivering prospects at a certain time, and, of course, the thrill of "matching." While making dating apps fun to use, these elements can also make them quite time-consuming. The amount of time that people spend on dating apps leads to questions of their actual time-saving nature.

Challenges

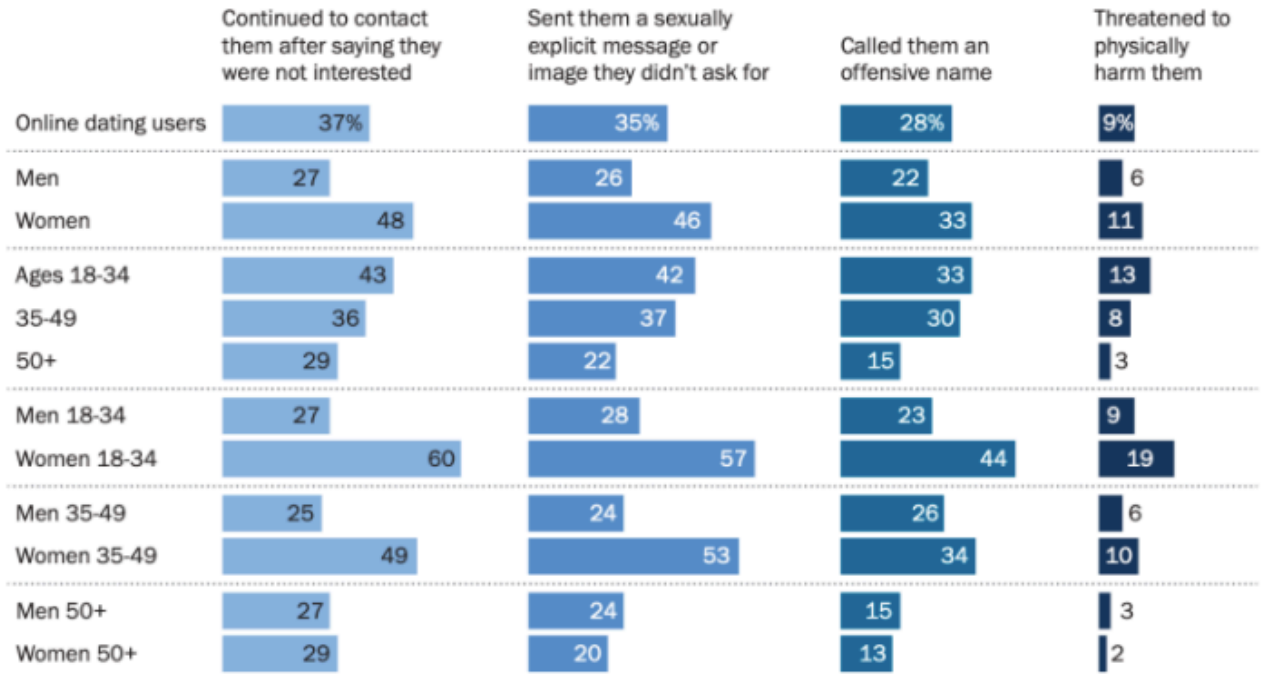
For all of their efficiencies and effectiveness (perceived and real), dating apps can create challenging experiences. Early critics were concerned that the open nature of dating online, as with social media in general, would lead to less civil behavior, and some users — particularly women and LGBTQ users — do feel harassed and unsafe There are concerns as well about data sharing and privacy. And even just using the apps can lead many (45% in Pew's study, Anderson et al., 2020) to feel fatigued and frustrated. The "paradox of choice" can stymie the ability to choose from such a vast array of matches. Eisenberg et al. (2017) observes that finding people online sets up an unrealistic expectation of the "optimal partner," making relationships seem superficial and non-binding.

Safety and civility

Interestingly, most users of dating apps (70%) feel that it's common for people to lie about themselves to seem more desirable (Anderson et al., 2020). Fifty-four percent of online daters say that someone else has seriously misrepresented themselves on their profile, and 28% have been contacted in a way that made them feel harassed or uncomfortable. A breakdown of those reporting negative interactions is shown below. Across the four questions asked in Pew's research, LGBT daters were significantly more likely to report having experienced harassment. While these behaviors can also occur in offline encounters, networked, efficient internet can make the fall-out from use of dating apps a greater possibility.

Younger women who have used dating sites or apps are especially likely to report having negative interactions with others on these platforms

% of online dating users in each group who say someone ___ on a dating site or app



Note: Online dating users refers to respondents who say they have ever used an online dating site or app. Those who did not give an answer are not shown.
Source: Survey of U.S. adults conducted Oct. 16-28, 2019.
"The Virtues and Downsides of Online Dating"

PEW RESEARCH CENTER

https://www.pewresearch.org/internet/2020/02/06/the-virtues-and-downsides-of-online-dating/

Another issue of safety lies with the internet's efficiency and speed in finding information (or people) that align with specific search interests. Eichenberg et al. (2017) write about "barebacking" (a metaphor for having unprotected sex), and those who search online to heighten the risk of infecting themselves with HIV or other sexually transmitted disease).

Data sharing and privacy

Like other interactive applications, dating apps collect user data, including age, gender identification, gender preferences, religion, political affiliation, and location (Heilwell, 2020). And users share videos, photos, and potentially their activity on social media. While visiting an app, data from other sites visited is fed to the app and used for marketing purposes and sales to third-party companies. Those concerned about privacy and data

sharing report less positive experiences with dating apps. In the Pew study, 58% of users reported concern about data sharing. In nearly the same frequency as those reporting knowledge of how the apps work (approximately 67%), those concerned over privacy and data sharing reported having negative experiences and viewed the apps as having a negative impact on their relationships. Slightly greater concern was expressed by older users (30 and up).

With this overview of ICT use by couples within the family and in couples on the way to building family, we now move to children's use of ICT across the complex trajectory of their development from birth through young adulthood. With a systems perspective of families, as you read, consider how other members of the family are affected and affect the impacts of ICT and children.

4.2 REFERENCES

Adler-Baeder, F., Futris, T. G., McGill, J., Richardson, E. W., & Dede Yildirim, E. (2022). Validating the couple relationship skills inventory. *Family Relations*, 71(1), 279-306.

Altman, I., & Taylor, D. (1973). Social penetration: The development of interpersonal relationships. New York: Holt, Rinehart, and Winston, Inc.

Andalibi, N., Bentley, F., & Quehl, K. (2017). Multi-channel topic-based mobile messaging in romantic relationships. Proceedings of the ACM on Human-Computer Interaction, 1(CSCW), 1-18.

Banerjee, D., & Rao, T. S. (2021). "#Intimacy" at times of COVID-19: The renewed impetus behind cybersex. *Journal of Psychosexual Health*, *3*(1), 13-17.

Bauman, Z. (2013). Liquid love: On the frailty of human bonds. John Wiley & Sons.

Bradford, A. B., Dobry, S., Sandberg, J. G., & Coyne, S. M. (2019). Baby with the bathwater? Examining the relationship between videogame use and relationship outcomes and the moderating effects of attachment behaviors among married casual gamers. *Journal of Marital and Family Therapy*, 45(4), 699-718.

Brody, N. & Caldwell, L. (2017): Cues filtered in, cues filtered out, cues cute, and cues grotesque: Teaching mediated communication with emoji Pictionary, Communication Teacher, DOI: 10.1080/17404622.2017.1401730

Bröning, S., & Wartberg, L. (2022). Attached to your smartphone? A dyadic perspective on perceived partner phubbing and attachment in long-term couple relationships. *Computers in Human Behavior*, 126, 106996.

Chen, Z., Gong, Y. and Xie, J. (2022), "From phubee to phubber: the transmission of phone snubbing behavior between marital partners", *Information Technology & People*, Vol. 35 No. 4, pp. 1493-1510. https://doi.org/10.1108/ITP-03-2020-0150

Courtice, E. L., & Shaughnessy, K. (2017). Technology-mediated sexual interaction and relationships: A systematic review of the literature. *Sexual and Relationship Therapy*, 32(3-4), 269-290.

Coyne, S.M., Busby, D., Bushman, B.J., Gentile, D.A., Ridge, R., & Stockdale, L. (2012). Gaming in the game of love: Effects of videogames on conflict in couples. *Family Relations: An Interdisciplinary Journal of Applied Family Studies*, 61(3), 388–396. https://doi.org/10.1111/j.1741-3729.2012.00712.x.

Cravens, J.D., and Whiting, J.B. (2015). Couples' Communication of Rules and Boundaries for Social Networking Site Use. In C. Breuss, Ed. Family Communication in the Age of Digital and Social Media. Peter Lang.

Döring, N. (2017). From internet sex to robotic sex: research status and challenges for sexology. *Journal of Sex Research* (Zeitschrift für Sexualforschung). 30, 35–57. doi:10.1055/s-0043-101471.

Ducharme, J. (2019). Digital rules you should follow when you're in love. https://time.com/5516735/healthy-digitalrelationship/

Duerksen, K. N., & Woodin, E. M. (2019). Technological intimate partner violence: Exploring technology-related perpetration factors and overlap with in-person intimate partner violence. *Computers in Human Behavior*, 98, 223-231

Dworkin, J., McCann, E., & McGuire, J. K. (2016). Coparenting in the digital era: Exploring divorced parents' use of technology. In G. Gianesini & S. L. Blair (Eds.), Divorce, separation, and remarriage: The transformation of family, (contemporary perspectives in family research), volume 10 (pp. 279–298). Bingley, UK: Emerald Group Publishing Limited.

Eichenberg, C., Huss, J. & Küsel, C. From Online Dating to Online Divorce: An Overview of Couple and Family Relationships Shaped Through Digital Media. *Contemporary Family Therapy* 39, 249–260 (2017). https://doi.org/10.1007/s10591-017-9434-x

ESA (Entertainment Software Association) (2021). Essential facts about the videogame industry. https://www.theesa.com/resource/2021-essential-facts-about-the-video-game-industry/

Futris, T. G., & Adler-Baeder, F. (2013). The National Extension Relationship and Marriage Education Model: Core teaching concepts for relationship and marriage enrichment programming. The University of Georgia Cooperative Extension. http://www.nermen.org/NERMEM.php

Galovan, A. M., Drouin, M., & McDaniel, B. T. (2018). Sexting profiles in the United States and Canada: Implications for individual and relationship well-being. *Computers in Human Behavior,* 79, 19-29.

Ganong, L. H., Coleman, M. Feistman, R., Jamison, T., & Markham, M.S.. (2012). Communication technology and postdivorce coparenting. *Family Relations*,61(3), 397-409.

Gingrich, R. (2017). Pornography and Committed Relationships: How Pre-existing Factors within a Dyad Change the Effect of Pornography on Heterosexual and Homosexual Couples. Actus: The Journal of Undergraduate Research and Creative Scholarship. https://scholarscompass.vcu.edu/cgi/viewcontent.cgi?article=1056&context=auctus

Giordano, A. L., & Cashwell, C. S. (2017). Cybersex addiction among college students: A prevalence study. *Sexual Addiction & Compulsivity*, 24(1-2), 47-57. https://www.frontiersin.org/articles/10.3389/fpsyt.2015.00054/full

Hertlein, K. M., & Chan, D. (2020). The rationale behind texting, videoconferencing, and mobile phones in couple relationships. *Marriage & Family Review*, 56(8), 739-763.

Hertlein, K., M., Nakamura, S., Arguello, P., & Langin, K. (2017). Sext-ual healing: application of the couple and family technology framework to cases of sexual dysfunction. *Sexual and Relationship Therapy*, 32(3-4), 345-353.

Hertlein, K. M., & Ancheta, K. (2014). Advantages and Disadvantages of Technology in Relationships: Findings from an Open-Ended Survey. *The Qualitative Report*, 19(11), 1-11. https://doi.org/10.46743/2160-3715/2014.1260

Hipp, C. J., & Carlson, R. G. (2021). The Dyadic Association among Technoference and Relationship and Sexual Satisfaction of Young Adult Couples. *Journal of Sex & Marital Therapy*, 47(5), 508-520.

Hobbs, M., Owen, S., & Gerber, L. (2017). Liquid love? Dating apps, sex, relationships and the digital transformation of intimacy. *Journal of Sociology,* 53(2), 271-284.

Labor, J. S., & Latosa, A. C. (2022). From locked down queer love: intimate queer online relationships during the COVID-19 pandemic. *Journal of Gender Studies*, 31 (6) 770-781. https://doi.org/10.1080/09589236.2021.1979482

Lenhart, A., & Duggan, M. (2014, February 11). Couples, the Internet and social media. Retrieved from http://pewinternet.org/Reports/2014/Couples-andthe-Internet.aspx

McAuliffe, M.Ed. (2021). Research handbook on international migration and digital technology. E. Elgar Online. https://doi.org/10.4337/9781839100611

McDaniel, B. T., & Coyne, S. M. (2016). "Technoference": The interference of technology in couple relationships and implications for women's personal and relational wellbeing. *Psychology of Popular Media Culture*, 5(1), 85–98. https://doi.org/10.1037/

McKenna, K. Y., Green, A. S., & Gleason, M. E. (2002). Relationship formation on the Internet: What's the big attraction?. *Journal of Social Issues*, 58(1), 9-31.

Macaranas, A., Venolia, G., Inkpen, K., & Tang, J. (2013, September). Sharing Experiences over Video: watching video programs together at a distance. In IFIP Conference on Human-Computer Interaction (pp. 73-90). Springer, Berlin, Heidelberg.

Marin, V. (2017). How to navigate social media boundaries in a relationship. New York Times. August 29. https://www.nytimes.com/2017/08/29/smarter-living/navigating-social-media-relationships.html

Mason, A. J., & Carr, C. T. (2022). Toward a theoretical framework of relational maintenance in computer-mediated communication. *Communication Theory*, 32(2), 243-264.

Messing, J., Bagwell-Gray, M., Brown, M. L., Kappas, A., & Durfee, A. (2020). Intersections of stalking and technology-based abuse: Emerging definitions, conceptualization, and measurement. *Journal of Family Violence*, 35(7), 693-704.

Miller, H., Kluver, D., Thebault-Spieker, J., Terveen, L., & Hecht, B. (2017, May). Understanding emoji ambiguity in context: The role of text in emoji-related miscommunication. In Eleventh international AAAI conference on web and social media.

Murray, C. E., & Campbell, E. C. (2015). The pleasures and perils of technology in intimate relationships. *Journal of Couple & Relationship Therapy*, 14(2), 116-140.

Novak, J. R., Sandberg, J. G., Jeffrey, A. J., & Young-Davis, S. (2016). The impact of texting on perceptions of face-to-face communication in couples in different relationship stages. *Journal of Couple & Relationship Therapy*, *15*(4), 274-294.

Nylander, S., Fådal, J., and Mottaghy, S. (2012). Couch Mobility: The Cell Phone's Most Important Feature at Home is Mobility. In CHI '12 Extended Abstracts on Human Factors in Computing Systems (CHI EA '12). ACM, New York, NY, USA, 1973–1978. https://doi.org/10.1145/2212776.2223738

Padilla-Walker, L. M., Coyne, S. M., & Fraser, A. M. (2012). Getting a High-Speed Family Connection: Associations Between Family Media Use and Family Connection. *Family Relations*, 61(3), 426-440.

Pickens, J. C., & Whiting, J. B. (2020). Tech talk: Analyzing the negotiations and rules around technology use in intimate relationships. *Contemporary Family Therapy*, 42(2), 175-189.

Rosenfeld, M. (2018). Are Tinder and Dating Apps Changing Dating and Mating in the USA? In Van Hook, J., McHale, S. M., & King, V. (Eds.). Families and Technology. Springer International Publishing. Pp. 103-117.

Russell, L. T., Ferraro, A. J., Beckmeyer, J. J., Markham, M. S., Wilkins-Clark, R. E., & Zimmermann, M. L. (2021). Communication technology use in post-divorce coparenting relationships: A typology and associations with post-divorce adjustment. *Journal of Social and Personal Relationships*, 38(12), 3752-3776.

Salmela, T., Colley, A., & Häkkilä, J. (2019, May). Together in Bed? Couples' Mobile Technology Use in Bed. In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (pp. 1-12).

Schwarz, P and Velotta, N. (2018). Online Dating: Changing Intimacy One Swipe at a Time? In Van Hook, J., McHale, S. M., & King, V. (Eds.). Families and Technology. Springer International Publishing. Pp. 57-88.

Smith, J.M. (2013). The Relationship Between Video Game Use and Couple Attachment Behaviors in Committed Romantic Relationships . Masters Thesis. Brigham Young University. https://scholarsarchive.byu.edu/cgi/viewcontent.cgi?article=4605&context=etd

Smyth, B.M., Ainscough, G. & Payne, J. (2020) Modes of Communication between High-Conflict Separated Parents: Exploring the Role of Media Multiplexity and Modality Switching, *Journal of Family Communication*, 20:3, 189-205, DOI: 10.1080/15267431.2020.1754826

Sprecher, S. (2009). Relationship initiation and formation on the Internet. *Marriage & Family Review*, *45*(6-8), 761-782.

Strasburger, V. C., Zimmerman, H., Temple, J. R., & Madigan, S. (2019). Teenagers, sexting, and the law. *Pediatrics*, 143(5).

Troitskaya, O., & Batkhina, A. (2022). Mobile application for couple relationships: Results of a pilot effectiveness study. *Family Process*, 61(2), 625-642.

Turkle, S. (2015). Stop googling. Let's talk. The New York Times, 27.

Turner, E., and Anderson, M. (2020). Roughly six-in-ten online daters in the U.S. are concerned about data collection. Pew research. https://www.pewresearch.org/fact-tank/2020/05/29/roughly-six-in-ten-online-daters-in-the-u-s-are-concerned-about-data-collection/

Twist, M. L., Belous, C.K., Maier, C.A., & Bergdall, M. (2017) Considering technology-based ecological elements in lesbian, gay, and bisexual partnered relationships, *Sexual and Relationship Therapy*, 32:3-4, 291-308, DOI: 10.1080/14681994.2017.1397945

Vaterlaus, J. M., & Tulane, S. (2019). The perceived influence of interactive technology on marital relationships. *Contemporary Family Therapy*, 41(3), 247-257.

Vogels, E., (2020). About half of never-married Americans have used an online dating site or app. Pew Research. https://www.pewresearch.org/fact-tank/2020/03/24/the-never-been-married-are-biggest-users-of-online-dating/

Vogels, E., and Anderson, M. (2020). Dating and relationships in the digital age. Pew Research https://www.pewresearch.org/internet/2020/05/08/dating-and-relationships-in-the-digital-age/

Vossler, Andreas (2016). Internet Infidelity 10 Years On: A Critical Review of the Literature. The Family Journal: Counseling and Therapy for Couples and Families, 24(4) pp. 359–366.

Walther, J. B. (1996). Computer-mediated communication: Impersonal, interpersonal, and hyperpersonal interaction. *Communication Research*, 23, 3–43.

Walther, J. B., & Parks, M. R. (2002). Cues filtered out, cues filtered in: Computer-mediated communication and relationships. In M. Knapp& J. Daly (Eds.), Handbook of interpersonal communication (pp. 529–563). Thousand Oaks, CA: Sage.

Wang, Xingchao & Xie, Xiaochun & Wang, Yuhui & Wang, Pengcheng & Lei, Li. (2017). Partner phubbing and depression among married Chinese adults: The roles of relationship satisfaction and relationship length. *Personality and Individual Differences*. 110. 12-17. 10.1016/j.paid.2017.01.014.

Webster, K. A. (2022). Pornography Use And Its Effect On Marital Quality. Dissertation. https://digitalcommons.liberty.edu/cgi/viewcontent.cgi?article=4925&context=doctoral

Weinstein, A. M., Zolek, R., Babkin, A., Cohen, K., & Lejoyeux, M. (2015). Factors predicting cybersex use and difficulties in forming intimate relationships among male and female users of cybersex. *Frontiers in Psychiatry*, 6, 54.

Willoughby, B., Rhoades, G., and Carroll, J. (2021). THE PORN GAP: How is Pornography Impacting Relationships between Men and Women Today? The Wheatley Institution, Brigham Young University. Available at https://wheatley.byu.edu/00000183-2328-dc42-a7f7-7ba86d810001/the-porn-gap.

Woodlock, D. (2017). The abuse of technology in domestic violence and stalking. *Violence Against Women*, 23(5), 584-602.

Zillich, A. F. (2020). Socially Shared Television Viewing: Preconditions, Processes and Effects of Co-viewing and Social TV. In How We Use the Media (pp. 133-156). Palgrave Macmillan, Cham.

4.3 LEARNING ACTIVITIES

Couple Conflict and Technology

Using this table, think of the range of ways in which technology is used by individuals and by couples for communication, entertainment, information gathering and sharing, tasks of daily life and work, and so on, and the range of types of technologies, devices, and applications. Consider the potential conflicts that might arise. Describe them, using words from the frameworks that indicate the effects and influences of technology.

Couple Differences #1

The chapter addressed couple differences by member age, relationship stage, and relationship longevity. Select at least three couples that vary in these ways – couples who are older (like your parents or grandparents) and younger; couples who are early in their relationship and those together for ten years or more; couples who are at the initiation phase and those who are committed. Interview them about their technology use — how it's used for communication, how the relationship demonstrates levels of trust (e.g., sharing passwords and accounts), where there might be sources of conflict or misunderstanding.

Couple Differences #2

A theme throughout this book is global diversity and differences in access. Identify research on couple technology use representative of non-White, non-U.S. couples. Use another characteristic of couples discussed in the chapter: couple status, age, socioeconomic status, presence of children, a purpose for using technology (e.g., couple initiation and use of dating apps, post-divorce, sexting, gaming). Reflect on how easy or challenging it was to find research on this topic, the volume of research available, who is doing this research, and what the findings tell you about couple technology use compared with what we've covered in this chapter (that predominantly focuses on couples in the U.S.).

Dating Apps #1: Effectiveness of Dating Apps

People meet through dating apps like Tinder and Grinder more than ever before. Yet are these apps effective for finding a long-term partner? Effectiveness can include feeling comfortable in the process of meeting others, and apps expose possible challenges to privacy and identity switching (e.g., catfishing). Debate the pros and cons of using dating apps for a) casual connections/mutual interests and for b) finding a potential partner for a committed relationship.

How do they compare to more IRL (in real life) ways of finding people?

Dating Apps #2: The paradox of choice?

This short video from CBS Mornings (2019, November 11) focuses on the impact of having too many choices in dating apps and the potential for de-individualization. View the video. Based on your own experience, or those of friends or group members, do you agree with this? Disagree?

Dating Apps #3: Serious threats to LGBTQIA+

This article speaks to the choices faced by many in the queer community when using dating apps: finding ways to connect while avoiding technology that exposes individuals to harassment and worse (particularly in countries with policies that do not support gender fluid lifestyles and sexual practices).

Consider the benefits and potential consequences raised in the article. Speak to friends who are queer, or reflect on your own experiences. What are avenues you'd suggest for safety and well-being when finding ways to connect?

Technology and Intimate Partner Violence: Bringing the CDC into the 21st Century

This page from the Centers for Disease Control offers helpful information, resources, and guidance regarding intimate partner violence. But while it was last reviewed in late 2021 (as of this textbook's writing), there is no mention of technology — not in the definition, the prevalence data, or the discussion of consequences. The bottom of the page offers guidelines in six areas. Given

what you've read in this chapter and what you know from your own experience and from using technology, how might you adapt those guidelines?

4.4 BLOG PROMPTS

In this chapter we examine the use of technology in couple communication and look at differences within and across couples. The Pew Report reading reported that, in 2014, the majority of committed couples said that technology did not have an impact on their relationship. They reported using technology in multiple ways, with use varying by age, but didn't see this use having an impact. What might couples be considering when they hear the word "impact" in a survey question? And how might they interpret impact related to a) the strength and quality of their relationships and b) the use of technology? Consider Hertlein and Blumer's conceptual framework as a resource to help identify "impacts" as we might view them from the perspective of family science.

A key consideration about our presence in the online world is the meaning we begin to ascribe to others. Anthony Weiner, a former legislator in New York who was denounced for his "sexting" with others (not his wife), said that the exchange felt like a game, that it was superficial. What might the use of dating apps and technology, which so easily allow us to swipe left and dismiss people, do to our views of others? Does this use have a lasting effect on our expectations of others or the value we place on them? Or are we looking at things far too seriously?

Increasingly, couples are bringing technology concerns to therapists' offices as an element of conflict for resolution. As family professionals, we want to prevent challenges in couple relationships. Given Gottman's or other professionals' considerations of what a healthy couple relationship is and can be, if you were leading a workshop on campus, what might you recommend

to protect, strengthen, and preserve couple relationships in terms of their individual and shared technology use? What topics would you cover? What skills would you want participants to gain from attending?

Throughout the book we cover the many advantages and efficiencies of ICT, most of which are enabled on our smartphones. For individuals attempting to flee an aggressive, potentially violent partner, phones can be a lifeline to resources. Yet they can also be the way for intimate partner violence (IPV) to be perpetrated, in ways not possible in the past. In your blog post, weigh the pros and cons of ICT in situations of IPV and take a stand for ways that ICT can be used safely and effectively.

4.5 ADDITIONAL RESOURCES & READINGS

Relationships in the Digital Age

- Section III: Couples in a Digital Age (6 chapters). In C. Breuss, Ed. (2015). Family communication in the age of digital and social media. Peter Lang.
- Eichenberg, C., Huss, J. & Küsel, C. (2017). From online dating to online divorce: An overview of couple and family relationships shaped through digital media. *Contemporary Family Therapy 39*, 249–260. https://doi.org/10.1007/s10591-017-9434-x
- Gottman, J. (2015) The seven principles for making marriage work. Random House.
- Hertlein, K. M., & Blumer, M. L. (2013). The couple and family technology framework: Intimate relationships in a digital age. Routledge.
- LeFebvre, L. E., & Fan, X. (2020). Ghosted?: Navigating strategies for reducing uncertainty and implications surrounding ambiguous loss. *Personal Relationships*, *27*(2), 433–459.
- Mendenhall, T., Plowman, E., & Trump, L. (2016). Intimate relationships: Where have we been? Where are we going? (2nd Edition). Kendall Hunt Publishing.
- Full issue: Perlman, D., Sprecher, S., & Drouin, M. (2021). Introduction to the special issue on communication technologies and relationships. *Journal of Social and Personal Relationships, 38*, 3417–3428.
- Rosenfeld, M. J. (2017). Marriage, choice, and couplehood in the age of the internet. *Sociological Science*, *4*, 490–510.
- Part II: Dating and mating in the internet age. (Chapters 4–6). In VanHook, J., McHale, S., & King, V. (2018). *Families and technology*. Springer International Publishing.
- Perspectives for critical thinking
- The New York Times. (2015, March 5). Digital Friendships. The Opinion Pages Room for Debate. Retrieved August 22, 2022, from https://www.nytimes.com/roomfordebate/2015/03/05/real-relationships-in-a-digital-world
- HISD. (n.d.). Cyber Safety / Digital relationships. Digital Relationships. Retrieved August 22, 2022, from https://www.houstonisd.org/Page/111620
- Seunagal, G. (2022, June 16). The Pros and cons of technology and relationships. Regain. Retrieved August 22, 2022, from https://www.regain.us/advice/general/the-pros-and-cons-of-technology-and-relationships/

Special Considerations

- Banerjee, D., & Rao, T. S. (2021). "# Intimacy" at times of COVID-19: The renewed impetus behind cybersex. Journal of Psychosexual Health, 3(1), 13-17.
- Devlin, K. (2018). Turned on: science, sex and robots. Bloomsbury Publishing
- Julian, K. (2019, May 17). Why are young people having so little sex? *The Atlantic.* Retrieved August 22, 2022, from https://www.theatlantic.com/magazine/archive/2018/12/the-sex-recession/573949/
- Labor, J. S., & Latosa, A. C. (2021). Locked down queer love: Intimate queer online relationships during the COVID-19 pandemic. *Journal of Gender Studies, 31(*6), 770–781. https://doi.org/10.1080/09589236.2021.1979482
- Vossler, Andreas (2016). Internet infidelity 10 years on: A critical review of the literature. *The Family Journal: Counseling and Therapy for Couples and Families, 24*(4), 359–366.
- Pinola, M. (2019) Get your digital accounts ready in case of death (couple considerations) https://www.nytimes.com/2019/10/03/smarter-living/wirecutter/get-your-digital-accounts-ready-in-case-of-death.html?smid=em-share

tIPV

- Roddy, M., Georgia, E., & Doss, B. (2018). Couples with intimate partner violence seeking relationship help: Associations and implications for self-help and online interventions. *Family Process, 57*(2), 293–307.
- Woodlock, D. (2017). The abuse of technology in domestic violence and stalking. *Violence Against Women, 23*(5), 584–602.

Website information

- Cybersex (VeryWell Health): https://www.verywellhealth.com/cybersex-pros-cons-4800752

From Love is Respect.org*

- Safety online. love is respect. (2021, August 9). Retrieved from https://www.loveisrespect.org/personal-safety/online-safety-while-dating/
- Internet & email safety. love is respect. (2022, May 2). Retrieved from https://www.loveisrespect.org/resources/internet-email-safety/
- Cell phone safety. love is respect. (2021, August 27). Retrieved from https://www.loveisrespect.org/

resources/cell-phone-safety/

- Social Media Safety. love is respect. (2020, September 23). Retrieved from https://www.loveisrespect.org/resources/social-media-safety/
- *According to their website, Loveisrespect is "the national resource to disrupt and prevent unhealthy relationships and intimate partner violence by empowering young people through inclusive and equitable education, support and resources."

Online Dating/Dating Apps

- Rudder, C. (2014). Dataclysm: Love, sex, race, and identity–What our online lives tell us about our offline selves. New York: Broadway Books.
- Roman, L., Brown, A., & Edes, A. (2018, January 2). What makes us click: How online dating shapes our relationships. NPR. Retrieved from https://www.npr.org/2018/01/02/572259115/what-makes-us-click-how-online-dating-shapes-our-relationships
- Finkel, E. J. (2015, February 6). In Defense of Tinder. The New York Times. Retrieved from https://www.nytimes.com/2015/02/08/opinion/sunday/in-defense-of-tinder.html
- New York Times The Weekly vlogcast: Facebook love scams: who's really behind that friend request? https://www.nytimes.com/2019/07/26/the-weekly/facebook-love-scams-whos-really-behind-that-friend-request.html
- Cyberbullying Resource Center: Digital Dating Abuse: A guide for parents and educators: https://cyberbullying.org/digital-dating-abuse-2

Special populations & dating apps

Older adults and dating apps

- Stassi, L. (2022, July 12). Hashtag love. Dating While Gray. Retrieved from https://www.wunc.org/podcast/dating-while-gray/2022-03-10/hashtag-love

Adults in the military and dating apps

- Marie, E. (2018, November 3). Single AF 101: The people talk #militarydating on Apple Podcasts. Apple Podcasts. Retrieved August 22, 2022, from https://podcasts.apple.com/us/podcast/the-people-talk-militarydating/id1407515341?i=1000423158069

CHAPTER 5: TECHNOLOGY USE AND IMPACTS IN CHILDREN, YOUTH AND YOUNG ADULTS

5.1 TECHNOLOGY USE AND IMPACTS IN CHILDREN, YOUTH AND YOUNG ADULTS

Passion rebuilds the world for the youth. It makes all things alive and significant.

—— Ralph Waldo Emerson

Chapter Insights

- Normative development is both universal in developmental tasks from birth through young adulthood in children, yet unique to the individual.
- Information and communications technology may have a positive or negative influence on physical, socio-emotional, psychological, and cognitive/learning domains of development in each age group.
- Bronfenbrenner's bioecological framework is updated by Navarro and Tudge to address technology's influence across the micro-, meso-, exo-, and macrosystems and as represented through processes by the person in context over time.
- ICT's impact can manifest through exposure, interaction, and displacement.
- Technology is increasingly integrated into education and learning, which has a direct bearing on the development of children, particularly during their experiences in school settings. At the same time, there is concern that technology use may have a negative impact on brain development and activity, and on learning.
- Recommendations for children's safe and effective use of technology are promoted by groups such as the American Academy of Pediatrics. These recommendations vary for young children ages 0–5 and for children and teens. A major study identified ICT impact differences in teens who were "family-engaged" and those who are "high risk." It too offers

recommendations for healthy teen use.

- The age at which most children possess smartphones is younger than the age most parents believe a child is ready. There are factors that parents can look to that indicate a child's readiness for smartphone use.
- Children's privacy may be compromised by their use of technology, and may impact their development. Across the ecology of children's lives, individuals and society are responsible for ensuring that children's data is safe, their identities are protected, and their accounts and time online are secure.
- After reading this chapter, identify what you feel inspired by, the questions that remain for you, and the steps you can take for your own technology use to be more intentional.

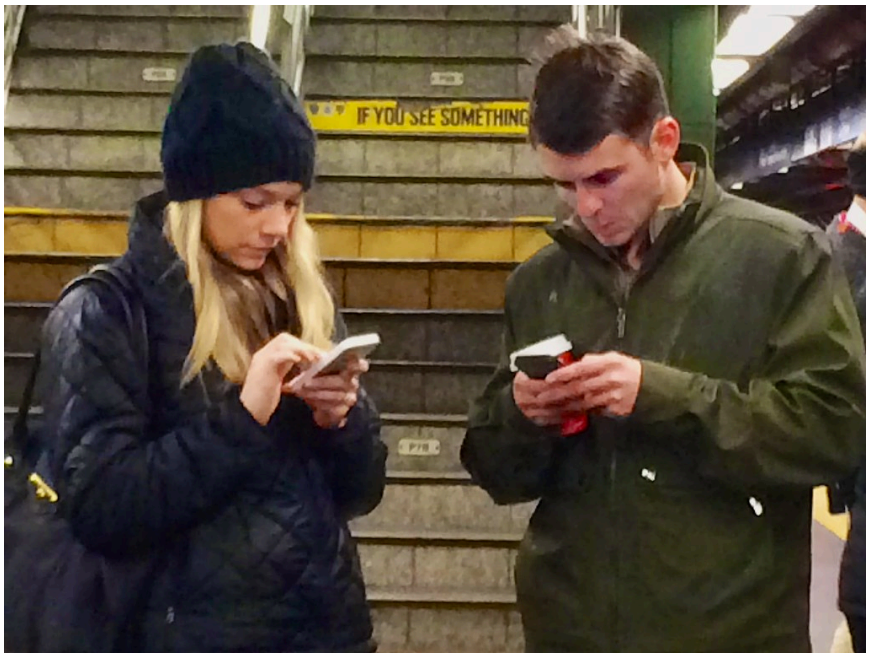
Introduction

Interest in children's use of technology and its effect on their well-being and development has captured our collective interest perhaps more than any other topic on technology and the family. According to UNICEF (2017), children and adolescents under the age of 18 make up about one-third of internet users worldwide. Yet, as we've discussed, use is not a uniform concept, nor is technology a stable phenomenon. As a relatively new phenomenon, interests vary. Populations born in the 1990s and later are growing up with ICT; they know no other life and are digital natives. Older millennials and earlier generations (including the author's baby boomer generation), in contrast, saw the internet and personal and mobile digital media come into our lives; we are, as Marc Prensky put it, digital immigrants. Technology is a marvel and a mystery we view within an ever-shrinking sense of the "before times," our lives before the internet. We know how we went to school, met our partners, navigated our way in a new city, and looked up the definition of a word without personal computers and the internet. We see the ease at which younger millennials and genZ-ers adopt (and depend on?) devices, use the internet, succumb to the pleasures and trappings of social media, and are advantaged in their learning by new educational technologies (for those so privileged). And we wonder...

- about children staring at screens and the effect the exposure to blue light has on their brains and sleep.
- about preteens absorbed in social media apps on their phones at all hours of the day, and about the interactions with others who might influence their self-esteem and self-confidence and possibly contribute to depression. Their exposure to graphic images and pornography might be confusing and may be an early influence for later high-risk behavior, and misinformation may frustrate eager learners.

Εργαστήριο Η/Υ – Computer Lab – CC BY 2.0

- about teenagers inside on gaming devices for hour after hour, and wonder if it is displacing the joy and understanding of nature. Their social media use exposes them to shared images of celebrities that contribute to self-comparison and body consciousness.
- about young adults using Venmo to instantly send money and ApplePay to cover the cost of coffee and wonder if these efficiencies are displacing learning skills for financial management.



Ed Yourdon -If you see something ... – CC BY-NC-SA 2.0

In short, excessive time spent on screens, exposure to specific content, and interactions with those who threaten safety raise concerns about technology's influence on development, life skills, and achievement, as documented by groups like the American Academy of Pediatrics. Yet to approach children's use of technology

wondering only about its harm is to seek half the story. Might these efficiencies and opportunities stimulate creativity and identity expression in ways earlier generations never experienced? Imagine the empowerment of the teens affected by the 2018 mass shooting at Marjory Stoneman Douglas High School in Parkland, Florida, who used their voices through social media and internet presence to speak out against gun violence. Might the current generation indeed be better off because it has access to a boundless world of information, a universe complementary to a place-based world for interaction and learning, and limitless information sharing? And as with all questions aimed at large groups, for whom might the benefits be greater? Or smaller? And what conditions encourage those effects?

excessive time spent on screens, exposure to specific content, and interactions with those who threaten safety raise concerns. Yet to approach children's use of technology wondering only about its harm is to seek half the story.

The chapter addresses ICT use and developmental impacts for children from birth through 18, the age defined by the UN Convention of Rights of the Child (UNICEF, nd), and through emerging adulthood (19–25 years).[1] Including young adulthood not only contributes a unique period of development to the discussion (Arnett, 2007), but represents continuity in the parenting experience for many families.

The chapter focuses on the breadth of human development in multiple domains[2], technology use by age, and impacts on the child's developmental well-being. In most cases, use and impacts derive from research and reports on the specific age group (e.g., middle childhood, adolescence), though they may pull from cross-age data (e.g., the EU Kids Online study includes ages 9–16). Following the ecological focus of this book, the chapter applies this approach to human development, and to implications for families, practitioners who work with children and families, and the wider community, society, and institutions.

As scholars have observed, this digital ecology in which children use and are impacted by technology is not linear; interactions have transactional and dynamic effects. Conceptual frameworks that lay out the ecological, transactional nature of technology's use and impact on children encourage readers to formulate questions about influences on use and on outcomes that the text may in fact answer. If they don't, these are likely

1. It is beyond the scope of this chapter to provide an exhaustive look at existing research on technology's effects on children, adolescents, and young adults. Reports from UNICEF (2017), the ICT Coalition for Children Online (Blum-Ross et al., 2018), WHO (2019), the European Commission (Chaudron, et al., 2017), OECD (Gottschalk, 2019), Pew Research, Commonsense Media, the TEC Center at the Erikson Institute, Ernest et al. (2014), and more produced every year, offer summaries from U.S., international and global studies.
2. Because each section offers only the briefest review of human development, links to detailed pages of developmental information by stage are provided. Readers are also encouraged to refer to open-source textbooks on human development, such as https://open.maricopa.edu/devpsych/.

excellent research questions that individual readers may want to pursue through discussion, a literature search, or a project.

The family-perspective focus of this book encourages us to emphasize the benefits and challenges that reflect parenting interests (Auxier, et al., 2020; Livingstone & Blum-Ross, 2020) and parenting influence (CommonsenseMedia, 2016; Coyne, et al. 2017; Livingstone & Blum-Ross, 2020; Wartella, et al., 2013). This includes the wider ecology of children's lives and the internet as part of those lives — and of their families — as a critical component of focus. As Sonia Livingstone and co-authors observed (2015)

> As the internet has become a routine part of children's lives, embedded into their lifeworld in a host of increasingly taken-for-granted ways, research is called to examine children's engagement with the world not only on but more importantly through the internet. Arguably, the question is no longer just that of children's relationship with the internet as a medium, but also with their relationship with the world as mediated by the internet in particular and changing ways. (p. 9)

An overview of impacts on development

In 2017, the UNICEF report Children in a Digital World summarized technology's impacts (pp. 4–5):

1. Digital technology has already changed the world, and as more and more children go online around the world, it is increasingly changing the experience of childhood.
2. Connectivity can be a game changer for some of the world's most marginalized children, helping them fulfill their potential and break intergenerational cycles of poverty.
3. Digital access is becoming the new dividing line, as millions of children who could benefit from digital technology are missing out.
4. Digital technology can also make children more susceptible to harm both online and off. Already vulnerable children may be at greater risk of harm, including loss of privacy.
5. The potential impact of ICT on children's mental health and happiness is a matter of growing public concern, and an area ripe for further research and

This video from the *New York Times* nicely conveys concerns about children's access to the internet and to social media when their development hasn't prepared them to understand what they are exposed to.

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://open.lib.umn.edu/technologyfamily/?p=465#oembed-1

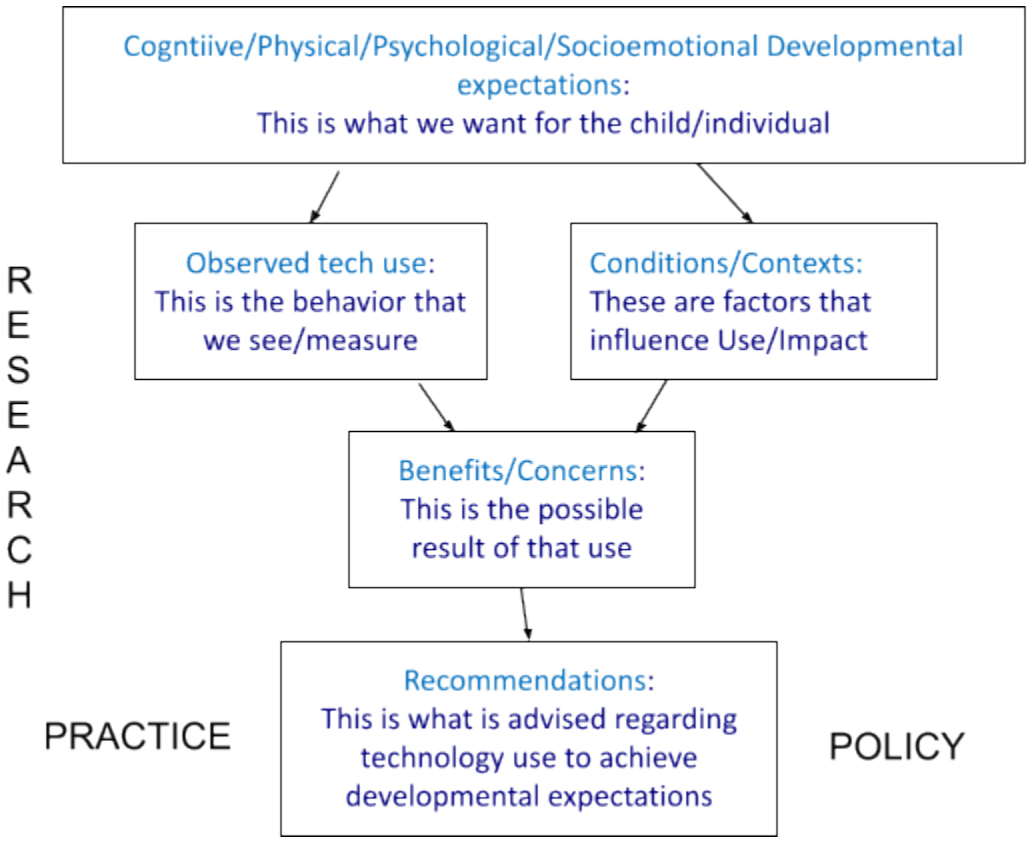
data.

6. The private sector — especially the technology and telecommunication industries — has a special responsibility and a unique ability to shape the impact of digital technology on children.

Despite age warnings and guidelines, children find ways to view inappropriate social media and YouTube channels. And even when they are on sites tailored to their age group, they can see advertisements that are inappropriate. In part, this results from technology companies mining data from children's technology use, and interpreting it in ways that promote age-inappropriate messages. From a macro or industry perspective, the video also highlights that tech companies do know how to program software to keep children safe.

These observations reflect technology's potential impacts on all domains of child development: physical growth, cognition, learning, and psychological, social, and emotional development. They align with the ages and stages of development: early childhood (birth to age 5), middle childhood (5–12), adolescence (13–18), and emerging adulthood (19–25), which supports a lifecourse perspective (Casimiro & Nico, 2018; Lim, 2016). They reflect differentiated effects depending on the child (e.g., age, gender, susceptibility, personality, health status), the context of use, type of device or application, degree of exposure, and the quality of interaction, and may reveal possible displacement effects (i.e., what the child is not doing while using technology). They commit the technology industry to action that promotes children's development in design, dissemination, and data gathering. And they reflect the realities of research in the area, which is prolific yet incomplete (Gottschalk, 2019).

The figure below presents the dominant interest in children's development as the basis for observation and exploration in research, and for the application of findings in practice and policy.



Perspectives on Human Development

To set the stage for the chapter, and for our understanding of human development in context and the influence of technology at multiple levels, we review Bronfenbrenner's bioecological perspective of human development with an updated perspective specific to children's technological realities. This review both contemporizes standing theory and lends itself to identifying frameworks for research, policy, and industry action.

General overview of human development

Individual perspectives on human development refer to the domains of cognition and learning, physical change, socio-emotional growth, and psychological functioning. Each domain operates as a whole, and trajectories of growth in each follow universal dimensions (i.e., those normative aspects expected of all human beings) expressed in unique ways depending on the DNA of the individual and the contexts that facilitate that expression. During puberty, for example, the expression of secondary sexual characteristics such as breasts and body hair due to increasing levels of gonadal steroids is normative in individuals who were assigned to be female at birth (AFAB). Yet the the timing of when breasts and body hair develop, and the expression of breast size and hair thickness, are unique to the genetic material of the individual. So while we regard

developmental expectations across ages of children that are somewhat predictable, we also respect that there is variation and great individual difference.

An ecological focus

Studies of individual development through interaction with technology can focus on a physiological level and one quite unique to the developing organism. For example, a researcher might study eye gaze, visual scanning, and face recognition on video images in very young infants (e.g., 6 months, Smith et al., 2021). Or sleep quality and duration might be examined in children related to blue screen exposure and the suppression of melatonin (Hale et al., 2019). Because children do not grow up in a laboratory under constant conditions, research on human development also tries to control for and understand the influence of context (e.g., nurture vs. nature). The child's context encourages questions about conditions that influence these outcomes. In the case of blue screens and sleep, might the timing or the content of the media (as influenced by actors in the child's setting) play a role? Individual difference theories propose that sleep disturbances may drive technology use: isn't it possible that children with poor sleep (due to context influences such as stress) turn to their computers, which exacerbates sleep challenges?

When talking about interpreting quantitative data on the impact of educational technologies and children's learning, Scott McLeod (2022) stated in a discussion forum of ISTE (International Society for Technology in Education):

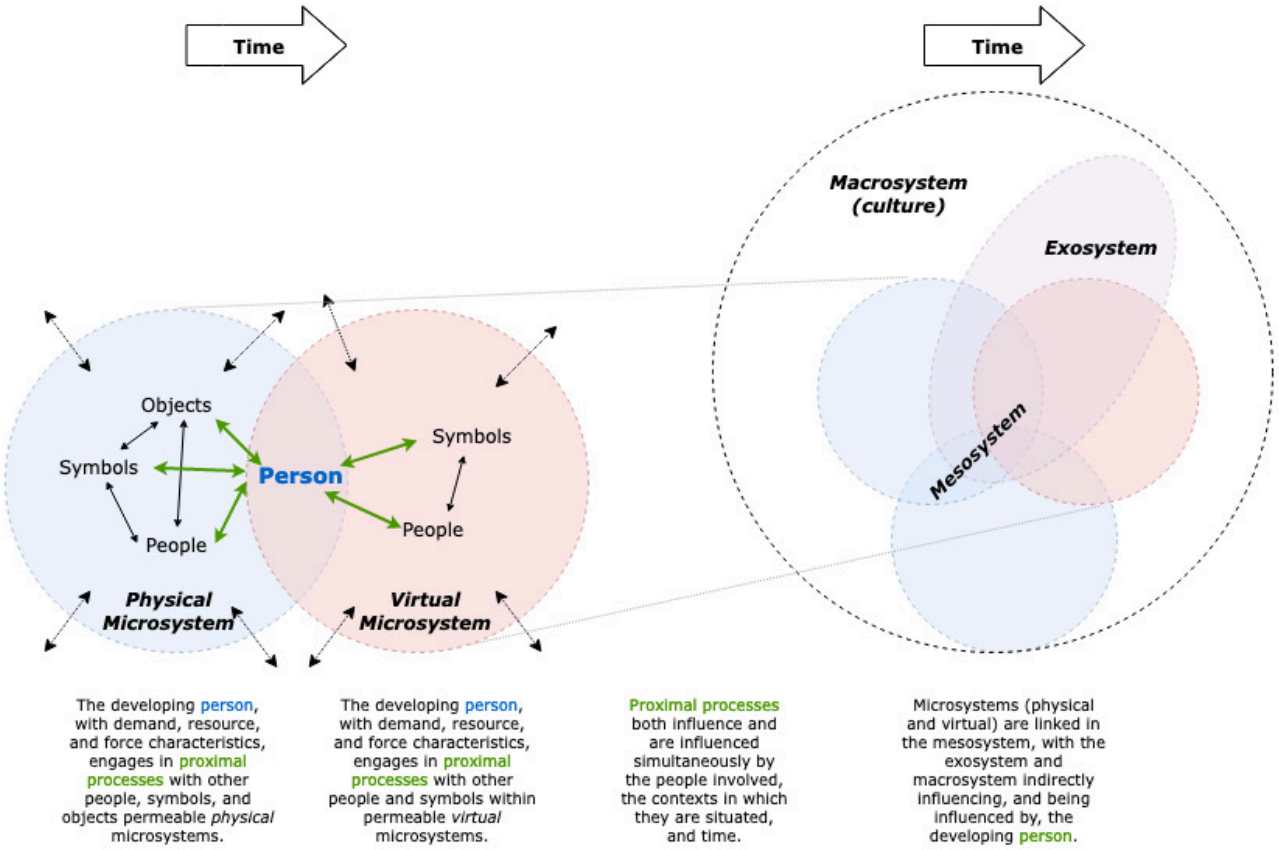
> One of the challenges of education is that everything is always so contextual. Kids vary, families vary, institutional climate and history vary, our educators vary... everything varies — quite significantly — across schools, culture, geography, time, and context. In other words, what works for one school may not for another, simply because of context or timing (and vice versa). Teasing this out is incredibly challenging but "why did it work (or not)?" is a much more important question than "did it work (or not)?"

With clear respect to the ongoing research on technology's impact on the biological and physiological processes of the developing organism, our focus on developmental outcomes places focus on contextual influences.

Neo-ecological perspective: "Technologizing Bronfenbrenner"

A critical contribution to the study of human development and the role of technology was offered in 2022 by Navarro and Tudge. By "technologizing Bronfenbrenner," the authors make two important enhancements to the traditional model that nests systems of interactions as processes that occur over time. As noted in previous chapters, Bronfenbrenner's model features contexts of interactions, most proximal to the developing individual (microsystem), including the mesosystem (two or more microsystem interactions), exosystem

(interactions that influence development yet one of which does not directly contain the individual), and microsystem (wider forces such as culture or public policies) that have an indirect yet potent influence on development. For their first adaptation, Navarro and Tudge identify **two parallel and interacting microsystems.**



Visual Representation of the PPCT Model of Neoecological Theory (Navarro & Tudge, 2022)
(Figure adapted from Tudge, 2008 by Jonathan Tudge)

Used with permission.

The internet is added as an environment for personal interaction alongside the physical. Their proposed virtual setting is defined as

> A virtual microsystem is a pattern of activities, social roles, and interpersonal relations experienced by the developing person on a given digital platform with particular relational and symbolic features that invite, permit, or inhibit, engagement in proximal processes within that environment. (p. 4)

Unique characteristics of the virtual microsystem include synchronous and asynchronous interactions, which

affect the individual's availability and presence; interactions that operate publicly and are persistent due to the ability of platforms to store data that can be retrieved; and interactions that occur with limited interpersonal cues. They observe that the individual can exist in virtual and physical microsystems at the same time, and that interactions in which the individual engages define the opening and closing of virtual microsystems.

Then, after accepting Bronfenbrenner's definitions of the mesosystem and ecosystem as inclusive of the digital world, they adapt the macrosystem with an integration of Tudge's (2008) definition of culture:

> A group of people who share a set of values, beliefs, and practices; who have access to the same institutions, resources, and technologies; who have a sense of identity of themselves as constituting a group; and who attempt to communicate those values, beliefs, and practices to the following generation. (pp. 3–4)

The adapted macrosystem effects indicate how "the rapid adoption of digital technology likely differentially impacts the development of adolescents depending upon the values and beliefs, resources, and social structure of their society" (Navarro & Tudge, 2022, p. 8). They offer the example of lower-income teens from Ghana using the internet for health information — a finding contrary to most research supporting the behavior in higher-income children — as a response to a more sexually repressive culture. Ghanian teens seek out the internet for information that is not otherwise available to them. Government censorship of the internet, as in China, is another culturally specific influence from the macrosystem. And certainly a key marcrosystem force is the digital divides created by differentials in access to the internet and to devices.

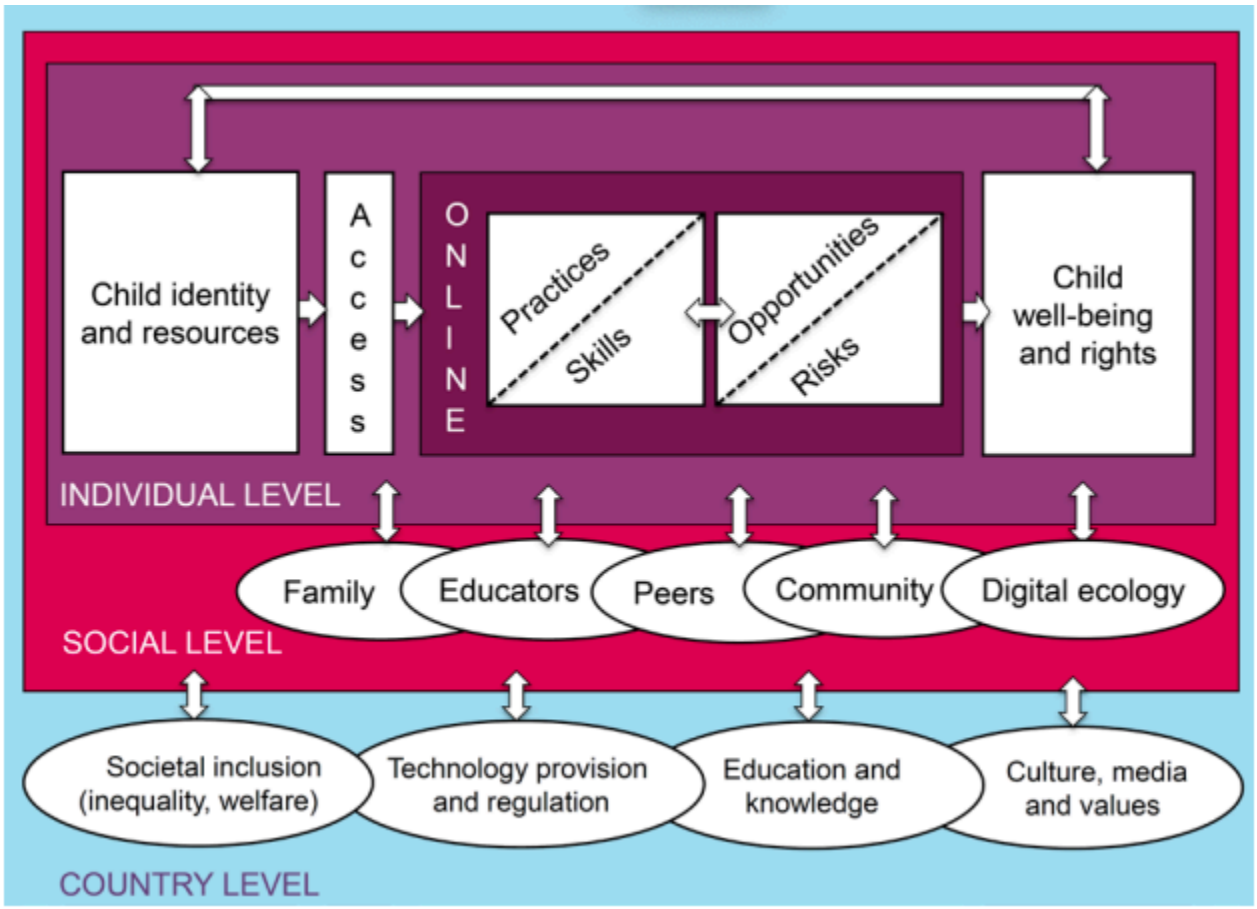
The second contribution from Navarro and Tudge's technologic adaptation of Bronfenbrenner's framework focuses on the **person-process-context-time construct** Bronfenbrenner used to explain how development occurs across influences from proximal and distal systems. In so doing, they integrate examples of personal characteristics that influence systems interactions, and also serve as outcomes, sub-labeled as force, resource, and demand. Time characteristics include micro time, meso time, and macro time, and then proximal processes, or "the conduit for synergistic interrelations between the characteristics of the person and their environments across time" (p. 11). They assert that **proximal processes can take three forms: symbolic, relational, and complex**, and observe that

> development is the result of the multidirectional interrelations, or synergy, between these constituent elements. Person characteristics, context, and time are interdependent; all three forces synergistically shape "the form, power, content, and direction of the proximal process" (Bronfenbrenner & Morris, 2006, p. 798), which in turn influence elements of the person, context, and time. As such, operationalizing neo-ecological theory requires scholars to embrace longitudinal designs and to gather data not only about people and their environments but also about the interactions and activities going on within them. (p. 13).[3]

3. Readers are encouraged to review Navarro and Tudge's original article and consider how their own research questions on technology's influence situate in this neo-ecological framework.

EU Kids Online Framework

The research framework adopted by a set of researchers in the European Union conveys a related notion of contextual influence on children's technology use as an interaction across multiple settings. The framework model is provided in the figure below.



Revised research framework model (p. 10). Developing a framework for researching children's online risks and opportunities in Europe. Livingstone et al., 2015: eukidsonline.net.

A primary interest of the EU Kids online study is children's well-being related to the risks they encounter through online interactions. Risks can be aggressive, sexual, value-related, and commercial, and with each the child can be a receiver, a participant, and an actor. In their framework, children's online practices, skills, opportunities, and risks can be viewed as virtual microsystem interactions. Those interactions may include one or more in their social setting (e.g, parent, peer), and may be both virtual and physical, which would identify them as mesosystem interactions in Navarro and Tudge's framework. Interactions by others in the exosystem can influence the child's online practices and skills — through, for example, actions taken in the child's community to make computers available at a public library, thus enhancing children's digital ecology. The country level in the EU Kids framework offers multiple macrosystem actors: technology provision and

regulation, culture, media and values, and societal inclusion. With the direction of influence from settings as synergistic, the researchers promote the interdependent nature of the settings, processes, and individuals.

With these ecological, dynamic, and technologically focused frameworks establishing the multi-context influences on children's development, and with the child's own behavior as a focus, we explore each age and stage of development and the current knowledge of technology use, influences on use, and impacts on child well-being.

Young Children and Technology

"Little girl with her mom looking at laptop together. Arms closeup." by shixart1985 is licensed under CC BY 2.0.

Development overview

This excellent short video on brain development is from Harvard Center on the Developing Child.

The period of development from birth[4] through age 5 is one of the most dynamic of a human's life. The rate of the body's physical development body is rapid, and early development of large and fine motor skills occurs, though as with body length and weight, further development occurs at later ages.[5]

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://open.lib.umn.edu/technologyfamily/?p=465#oembed-2

Most exciting is the development of the brain. Very early neural connections establish pathways for lifelong learning that affect both brain functioning and brain size. Children's environment is critical to the development of these neural pathways, as environmental stimuli encourage initial and deeper connections. Children's neural connections develop paths for future learning during a critical time period of plasticity (Gottschalk, 2019). With brain development, young children gain abilities with executive functioning (sense of organization of information, retrieval, memory), language and literacy, and a sense of self. These are aided by their abilities to move about and use their hands, mouth, and ears to explore and gather information.

Yet comfort with and attachment to their caregiver are key to children's natural exploration for learning. Through social interaction early in life that conveys a sense of consistency and trust, children develop a connectedness that encourages their confidence. As they explore and have opportunities to interact with others, children gain an interest in being social and move from "parallel" play (playing alongside) to "cooperative" play (playing with others), and to understanding social rules. Through this exploration, the brain continues to develop, and develop stronger neural connections. These early years also prompt an early sense of oneself. A child's identity begins to form and they roughly understand themselves as unique individuals in the world, and apart from their caregivers. Positive interactions with others in their world reinforce the sense of belonging and self-worth, encouraging exploration and growth.

4. Naturally, development begins before birth. This review will not consider influences from technology during the prenatal period on children's development, though the idea is fascinating, isn't it?
5. For an excellent review of young childhood development through the lens of media literacy, see Child Development 101 from the Erikson Institute Technology in Early Childhood Center. For this and other sections, "developmental overview" also links to a page from the Centers for Disease Control.

Overview of developmental achievements in early childhood

- **Physical**: Rapid brain and body development. Early neural connections establish pathways for lifelong learning. Early development of large and small motor skills.
- **Cognitive**: Early learning with brain development. Gaining abilities in executive function, memory, language, and literacy. Exploration and curiosity can mean adult perception of misbehavior.
- **Social/Emotional**: Establish early nurturing connectedness (attachment) with a primary caregiver which offers a sense of confidence and trust for exploration and growth. Early socialization develops through interactions with others, including peers.
- **Psychological**: Early development of a sense of self, self esteem, and self-concept.

Young children's technology use

"Online Investing?" by Monkey Mash Button is licensed under CC BY-SA 2.0.

Country government agencies recommend no screen exposure for children under 2 (see table below). Guidelines for very young children center more on limiting exposure rather than recommending use, up to 60 minutes for children 3–4 years, providing that there is adult interaction during use. (Gottschalk, 2019; WHO, 2019). Nevertheless, young children's time with screens is reported to be just under one hour for children to age 2 (.47), and 2 hours 39 minutes for children 3–5 years, with the majority of time on TV (Commonsense Media, 2017). Young children's exposure to digital technologies may begin months after birth (WHO, 2019). Auxier et al. (2020) report that nearly half (48%) of children under 5 have used a tablet and 55% have used a smartphone. Of parents who stated that their child 12 years or younger has used a smartphone, 6 in 10 reported the child began engagement with a smartphone before the age of 5, and roughly 1 in 3 reporting their child began before age 2 (Auxier et al., 2020). YouTube is popular with very young children, with up to 80% having watched it, and 25% watching it several times a day. Black and Hispanic parents reported higher rates of YouTube viewing several times a day. These parents are also more likely to report concerns that their young children are exposed to potentially negative images and messages, such as sex, violence and drug use, and gender and racial stereotypes. (Commonsense Media 2017). U.S. parents also report that approximately 5% of children under 5 use social media (especially TikTok and Snapchat), and 29% say their young child interacts with a voice assistant (e.g. Alexa, Siri), primarily to play music (reported by 79%). Throughout this chapter and in later chapters (e.g., cCapter 7 on parent-child relationships and technology), we explore parent and family contexts that influence young children's technology consumption.

Technology use in early childhood education and child care settings

While much of the research on young children's technology use is gathered from parents, many children

many children attend child care and/or early childhood education and are exposed to digital devices and the internet by teachers directly or indirectly (e.g., from teachers' personal use around children).

attend child care and/or early childhood education and are exposed to digital devices and the internet by teachers directly or indirectly (e.g., from teachers' personal use around children). According to the National Center for Educational Statistics, in 2019 parents reported that 59% of children 5 years or younger and not enrolled in kindergarten were in some type of nonparental care. Of these, the majority (62%, or 37% of the total) were attending a day are center, preschool, or prekindergarten (center-based care). Smaller numbers were cared for by a relative (38% of those in care) or in a private home by someone not related to them (20%).

A recent review of the literature by **Undheim (2022) categorized technology in early childhood center settings as screen-based, not screen-based (e.g., 3D printers), Internet of Toys (IoT), and exploratory technology (e.g., digital telescopes).** The studies focused on either the children's perspective or the teachers', and were primarily concerned with the pedagogical value or use of the technologies. They also observed discussion of access differentials between home and school, and teachers' knowledge, skills, and beliefs. Both areas are considered disconnects in children's valuable use of digital technology (e.g., teachers who have open attitudes and skills are more likely to provide meaningful interactions and sustained learning). The author observes that the majority of the studies lean toward a more positive view of children's learning and play with technology, and rarely lend a critical eye to use. Some of the effects of children's technology use in early childhood settings identified from research are discussed in the next section. [6]Discussion of teacher competence and skill with technology is discussed in Chapter 11.

6. Readers may also follow early learning technology research centers such as the Erikson Technology in Early Childhood for ongoing research.

Interests in young children's development related to technology

For preschool-age children (2 ½ to 5 years), there is some demonstrated benefit of well-constructed media in acquiring alphabet recognition and learning sounds, and in greater emotion recognition, empathy, and self-efficacy. Young children are creators with technology, producing stories with rich narratives, characters, and representations of their social understanding (Undheim, 2022). A key to these benefits is the interaction and presence of an adult.

Brain development and its related functions of language and problem solving, exposure to content that may be challenging for children to understand, the quality of sleep ,and body weight are all key interests in research on technology use by children from birth to age 5.

Research also indicates that excessive TV watching reduces language, cognition, and socioemotional development, largely due to reduced parent-child interaction. There is concern that early behavior with TV watching will establish a habit in children. The quality and content of TV is another consideration, particularly when children are exposed to content that is not prosocial. Children who form a habit of passive TV or screen viewing also are at risk of early obesity. Not only is passive viewing a sedentary activity, but it exposes children to commercial content that promotes lack of exercise and high-calorie eating. And sleep issues have been observed in young children who have media in their rooms. Diminished sleep is observed when infants are exposed to blue light from screens, which suppresses endogenous melatonin. The content of what is viewed can also create an elevated heart rate, making it hard for young children to sleep. A focus on screens can negatively affect babies' need for reciprocal interaction for learning language, a sense of self, and executive functioning (Ernest et al., 2014; Gottschalk, 2019).

Recommendations to date

The table below lists guidelines for young children (and older groups) as stated by professional agencies in the U.S., Canada, and selected countries. No screen time is recommended for infants and toddlers (under the age of 18 months), except for occasional video chat (per the AAP). As noted, any programming should be intentionally selected for quality, and interactivity with an adult is key. If we consider the multiple advantages of a caregiver reading a book with a child, the value of using technology with a young child is evident. When reading with a caregiver, children better understand language and the context of language and literacy, they can be scaffolded to apply content from existing text and their questions can be answered, and the emotional connection when reading and responding with another reinforces neural pathways. With screens, having a peer or parent is especially important to help cognition. Research indicates that it's not the medium (video

screens) that is a barrier to learning, but the lack of a partner to help children make sense of what they are seeing and interacting with (Lytle et al., 2018).

Screen time recommendations (from Gottshalk, 2019)

Country/institution	Infants/toddlers	Early childhood	School-age – adolescence	Other recommendations
AAP (United States) (AAP, 2020)	None, except video chatting (under 18 months)	1 hour of high quality programming, co-view	Consistent limits on time and type	Turn off screens when not in use; ensure screen time doesn't displace other behaviors essential for health
Canada	None	<1 hour	<2 hours (CSEP only)	Limited sitting for extended periods (CSEP); adults model healthy screen use (CPS)
Canadian Society for Exercise Physiology (CSEP, 2017)				
Canadian Paediatric Society (Canadian Paediatric Society, 2017)				
Australian Government Department of Health (Australian Government Department of Health, 2017)	None (under 12 months);	<1 hour	<2 hours (entertainment)	
New Zealand Ministry of Health (Ministry of Health, 2017)	None	<1 hour	<2 hours (recreational)	Adapted from CSEP guidelines
German Federal Ministry of Health (Rütten and Pfeifer, 2016)	None	30 minutes	1 hour (primary school) – 2 hours (adolescents)	Avoid as much as possible; avoid screen time completely for children under 2, including background television

A shorthand version of recommendations for young children by the American Academy of Pediatrics states:

- No screens under age 2.
- Limit to 1 hour a day (2–5 yrs).
- Use technology along with children.
- Limit their exposure.
- Observe what it's displacing.

- Limit when they use (not close to bedtime).
- Limit where they use.

Experts agree that children must be prepared for technology use in their future (Ernest et al., 2014). To do so, we must view the internet and mobile, digital devices and applications realistically in terms of both their benefits and ways they can be detrimental. This requires ongoing synergy between research, practice, and policy, so that information and action from one sphere inform the others. The report also observed that caregivers and educators can help children recognize how their identities, knowledge, skills, and values are shaped by forces around them (social, cultural, and political), by how they are represented in the media, and by their online interactions.

The Erikson Center for Technology and Early Childhood offers guidelines for media literacy in young children. These may serve as goals or indicators of success:

Erikson Center Media Literacy Guidelines for Young Children[7]

- Children will learn to intentionally access, select, and manipulate media.
- Children will learn to engage and explore with media in a way that is supportive of their overall development and learning.
- Children will learn to comprehend media messages and practices.
- Children will learn to critically inquire about media and their use of media.
- Children will learn to evaluate the content and impact of media in a developmentally appropriate way.
- Children will learn to create and express ideas using media.

To encourage these skills in children's worlds, Erikson CML also provides recommendations for caregivers and practitioners. These are general reflections on understanding oneself as a learner and teacher, and underscore the AAP's recommendations. Additional information for both of these groups is provided in Chapters 6 and 7 (for parents) and 11 (for practitioners).

7. For the entire document please see https://www.erikson.edu/wp-content/uploads/2021/06/TEC-MediaLiteracy-Framework.pdf

With regard to research priorities, the EU Kids online framework (2015) includes the following areas:

1. Factors relating to children's identity and resources, beyond demographic variables.
2. New modes of access to the internet, as this becomes more mobile, personalized, and pervasive.
3. A multidimensional analysis of digital skills and literacies and their significance for well-being.
4. A rethinking of the "ladder of opportunities" to identify whether and when children undertake more ambitious creative or civic online activities.
5. New kinds of online risks, including risks to personal data, privacy issues, and online reputation management.
6. The interplay between children's digital practices and proprietary policies and mechanisms.
7. Children's desire to experiment and transgress boundaries, to grasp children's agency online.
8. Extending the analysis of how parents mediate their children's internet use to the potential importance of other socializing agents.
9. Extending research on use of digital media from 9-to 16-year-olds to much younger children.
10. Research on socio-technological innovations in smart/wearable/ubiquitous everyday devices.
11. The implications of digital engagement as it may reconfigure (undermine or enhance, alter or diversify) children's well-being in the long term.
12. Connecting the research agenda on children's online access, risks, and opportunities to the broader agenda of children's rights — provision, participation, and protection — in the digital age.

Middle Childhood and Technology

"G4C15 Public Arcade at Tribeca Family Street Fair: Co.lab: StoryToys" by Games for Change is licensed under CC BY-ND 2.0.

Development overview

Middle childhood[8], ages 6–12, has been called a "latency" period of human development. Compared with the dynamic rate of growth in the early years, and the rapid changes that occur during early, middle, and late adolescence, skeletal and muscular growth and dexterity happen at a slower rate. Cognitively, learning moves to the operational stage, with abilities to organize and use logic to solve problems. Many children at this age enjoy playing games with rules, collecting, and developing a type of expertise. They are also often eager to explore and learn new things. Socially, exposure to peers is significant during middle childhood, as the majority of children begin formal schooling. They also have opportunities for afterschool programs, clubs, sports, and other activities with peers. As children are learning to cooperate with others, they may be subject to bullying and other expressions of power. Psychologically, children in middle childhood are continuing to develop an identity of themselves, as a part of the family, yet also as unique individuals.

Overview of developmental achievements in middle childhood

- **Physical development:** Slower body rate of growth; fine and large motor skills continue to be refined. Puberty at the end of this stage.
- **Cognitive/brain/learning:** Thinking becomes more logical and ordered; able to use if-then perspective; expertise, moral development, and ethical behavior.
- **Social/emotional development:** Peer socialization; exposure to bullying from the assertion of power in peer groups.
- **Psychological:** Strengthening a sense of gender identity, self as separate from family.

Technology use

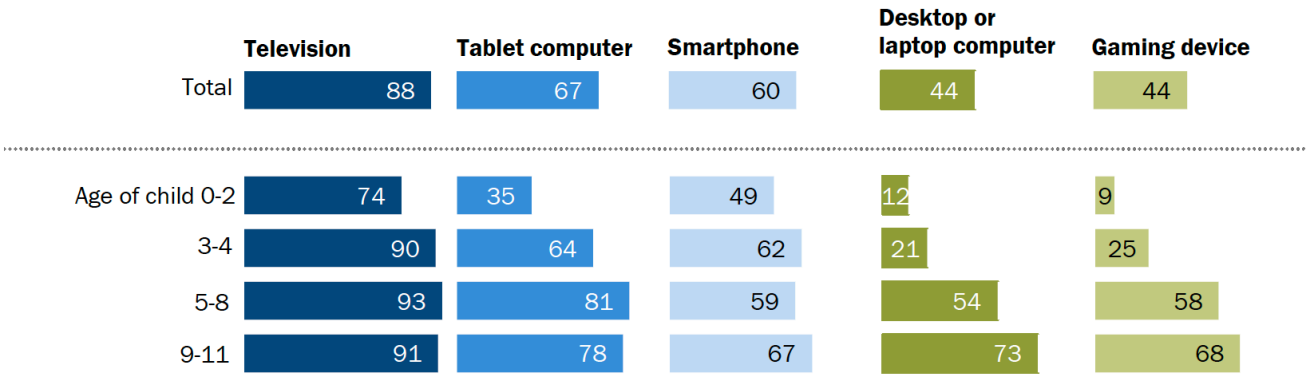
Interest in activities, stronger peer relationships and time spent in school/on school subjects encourage children 6-12 years old to use a variety of devices and explore a range of applications. School-age children are prevalent media users, with 80% using a tablet and 63% using a smartphone (Auxier et al., 2020). Even so, only 22% of parents feel it's OK for children under 12 to own a smartphone. They are more tolerant of children having a tablet, with 65% reporting that a tablet is acceptable for children under 12. As indicated in

8. A useful overview of development during middle childhood can be read at https://medlineplus.gov/ency/article/002017.htm.

the chart below, over half of school-age children age 5–8 and 9–11 have used all five types of devices listed. Larger use differences between school-age and younger children exist for computers and gaming devices.

Children's engagement with certain types of digital devices varies widely by age

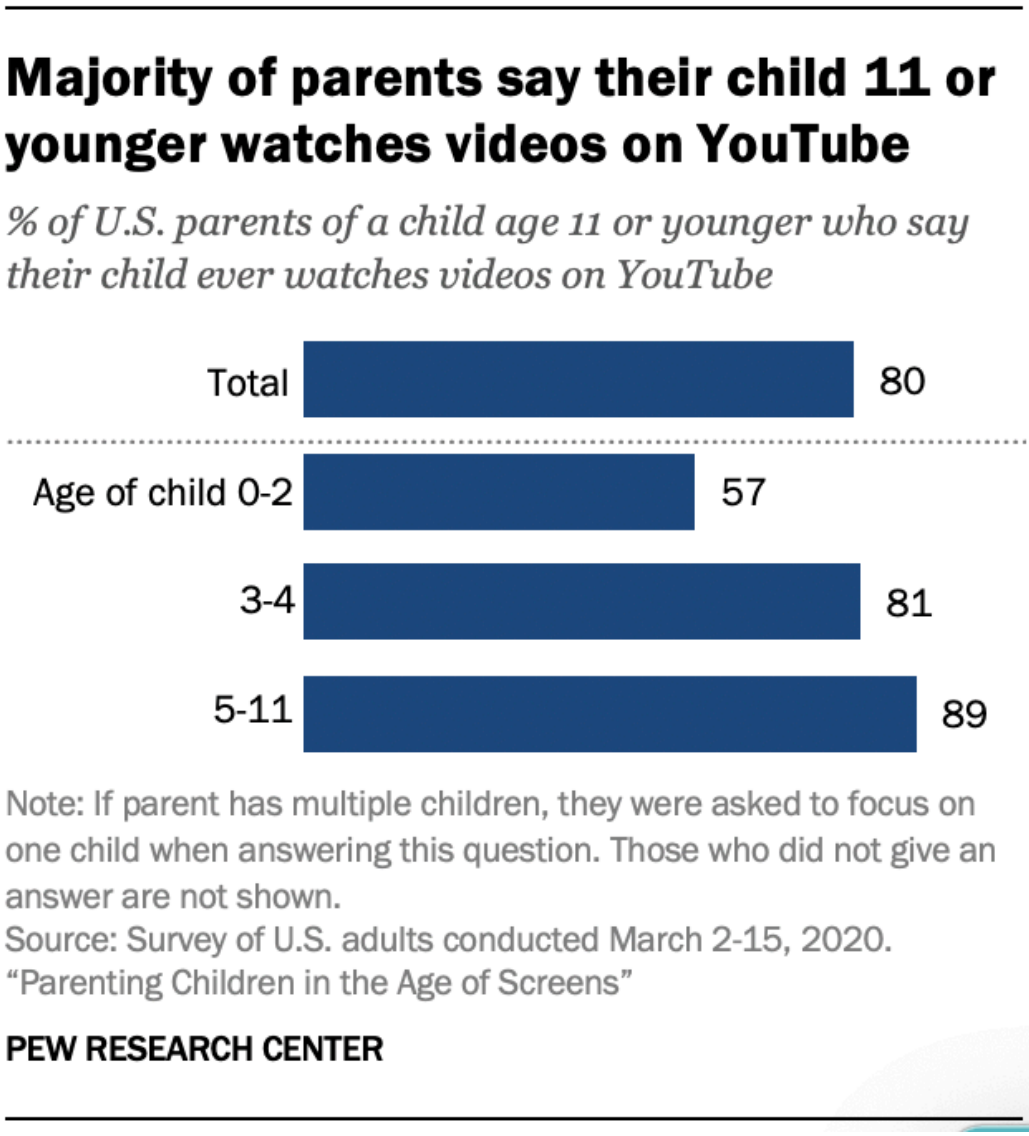
% of U.S. parents of a child age 11 or younger who say that, as far as they know, their child ever uses or interacts with a ...



Note: If parent has multiple children, they were asked to focus on one child when answering this question. Those who did not give an answer are not shown.
Source: Survey of U.S. adults conducted March 2-15, 2020.
"Parenting Children in the Age of Screens"

PEW RESEARCH CENTER

A 2021 report from Commonsense Media indicates that average screen time use by tweens (ages 8–12) increased 17% from 2015 to 2021, from 4 ½ hours to 5 hours 33 minutes. As observed with teens (and discussed later in the chapter) screen time is greater among boys, children who are Latino, and those in families with less income. YouTube is popular with children, with 89% of parents reporting that their 5–11-year-old watches videos on YouTube (Pew). Just over half (53%) report that their child watches YouTube at least once a day. Commonsense Media reports that "tweens watch an hour of online videos per day."



Social media is popular with children ages 9–11, with parents reporting 30% on TikTok, 22% on Snapchat, and 11% on Instagram. Commonsense Media (2021) reports that 11% of 8–12-year-olds are on Snapchat and 10% on Instagram (their data was drawn from children, not adults). That said, small portions of children 5–8 years (i.e., 3–11%) are also reported to visit these sites, despite age warnings on the applications (Schaeffer, 2021). Parental acceptance of screens also changes during this age: 67% are tolerant of children under 12 having a tablet, though the majority of parents (73%) believe that 12 or older is the age at which it is acceptable for children to have their own phone (Auxier et al., 2020). And with regard to voice-activated devices, just over one-third (36%) of parents with a child 11 or younger reported that their child had engaged with a voice-activated assistant such as Siri or Alexa. Functions of these devices for children include playing music (82%), providing information (66%), and hearing a joke or playing games (47%).

Impacts

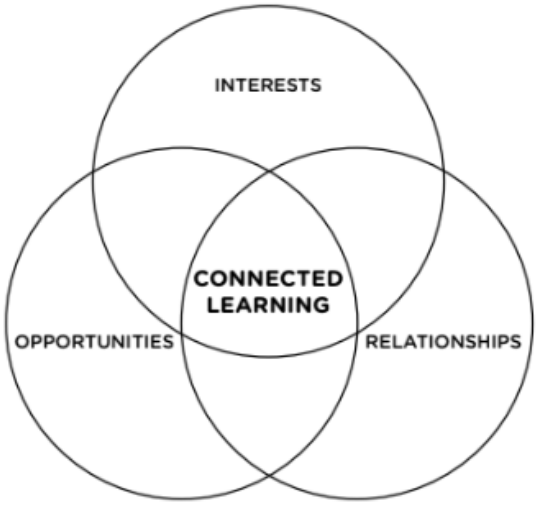
Technology offers a number of potential benefits for children ages 6–12:

"student_ipad_school – 205" CC permission by Brad Flickinger

- Exposure to new ideas, increased awareness of events and issues, information that reinforces interests.
- Access to information about health and body changes as puberty approaches.
- Enhanced communication with family and friends, especially those geographically separated; enhanced access to support networks through social media.
- Aiding in learning in school and beyond: tablets, media devices for content creation, digital stories, blogs, etc. (digital ecology).
- The expression of identity through interest exploration, creative pursuits, and expression.

In contrast to learning that takes place in a formal classroom, connected learning builds on learner interests through relationships (with those who will promote deeper understanding) and opportunities (to explore additional ways of understanding and deeper content).

For children gaining enhanced access to technology during middle childhood, *"connected learning"* promotes the value of interactive, mobile, creative technologies and children's learning (Ito et al., 2020) and encourages the pursuit of interests across the "learning ecology" (Barron, 2006) through opportunities and relationships.



Three spheres of learning that are integrated in connected learning. (in Ito et al., 2020)

As observed by the Connected Learning Research Network (Ito et al., 2020), connected learning takes root when:

- organizations sponsor and legitimize the interests and identities of diverse youth,
- learners are engaged in shared practices such as creative production, research, or friendly competition,
- these practices are guided by shared purpose such as contributions to communities, social change, or solving real problems, and
- learning is connected across settings through brokering, coordination, and openly networked platforms (p. 5).

In Chapter 8 we discuss a family podcast in which a father and his two children talk about Star Wars. [9] Because of the relationships and opportunities afforded through both children's interests that integrate technology (one in music, the other in video production), the family's experiences enable the children to "connect" their learning across multiple spheres — including application in traditional schooling. Readers interested in learning more about connected learning may want to visit the Connected Learning Alliance. The boom in learning technologies used in the classroom — and teacher competencies to ensure pedagogical value — speak to the promise of digital engagement throughout the school years. Technologies used for learning in elementary and secondary schools are discussed later in this section.

Online and videogames are very popular with children in middle childhood. Jessica Navarro, the technology and human development researcher mentioned previously, writes of her son's experience with playing the online game Fortnite (2021). She admits feeling leery about his play when the hype pointed to the exposure to first-person shooter activity and violence. Yet observing him play with friends, including new friends met online, showed her the value of the game for developing collaboration skills (social) and problem-solving (cognitive), checking two of the developmental domain boxes. An interest in games with rules, and the development of eye-hand coordination during this age, can make participation in online interactive games a positive experience. And very recent research by the National Institutes for Drug Abuse (NIDA) identified a relationship between playing videogames for 3 hours by 9 and 10 year olds and benefits to cognitive tasks involving impulse control and working memory (NIDA, 2022). That said, and as Navarro observes, the

9. Children of the Force: childrenoftheforce.com

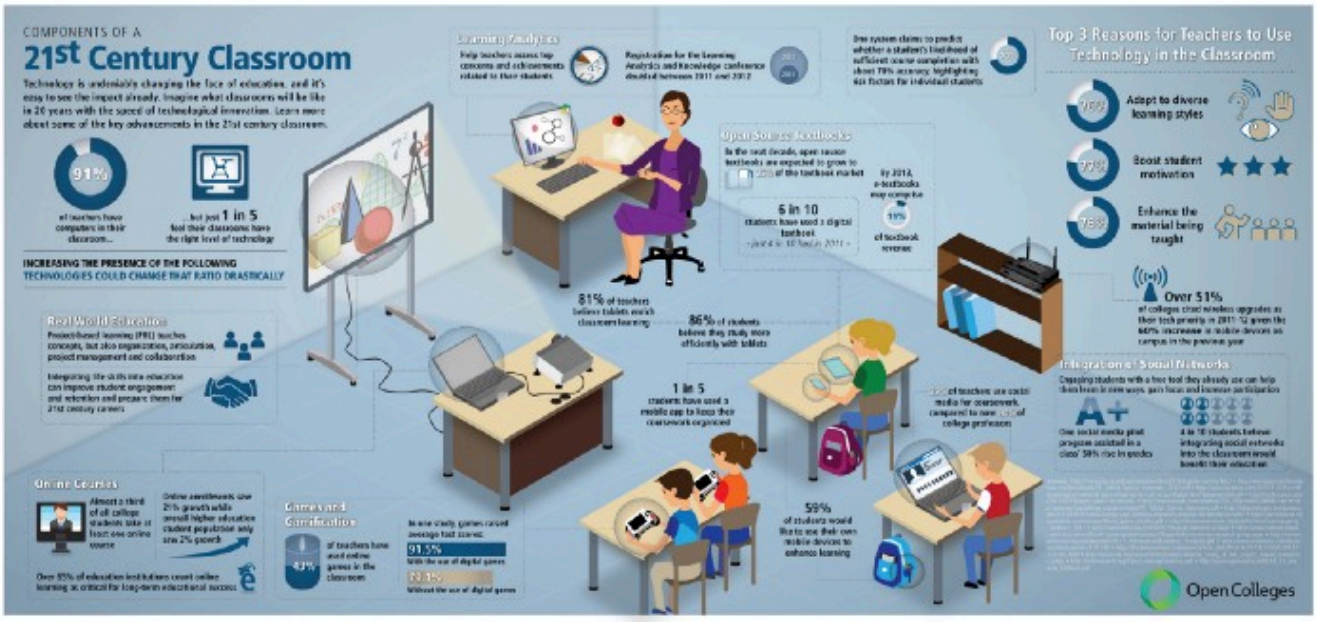
online chat features of these games can also expose vulnerable children to bullying and contact with adults (McInroy & Mishna, 2017) and to violence, which can influence the acceptance of oppression and lack of empathy (Ernest et al., 2014). Parental controls can help moderate what children are exposed to, and by monitoring children's play and, especially, their response to the play, parents can be aware of the value or possible consequences these games afford.

Impacts — Exposure to screens

A primary developmental concern at this age is an over-reliance on screens that leaves children exposed to threats they may not have the cognitive abilities to reason through or social maturity to handle (Gottschalk, 2019). Long hours on computers also contribute to physical health concerns about childhood obesity, blue screen exposure and sleep deprivation, and weak posture. DeMoor et al. (2008) lists three primary areas of concern in internet exposure as content, contact, and commercial. Passive viewing and exposure to influencers on social media (contact) are linked with childhood depression, stress, and anxiety. Concerns have been lodged about children's lack of privacy and the potential for commercial applications and, as discussed in the next section, even school software to track children's use, user patterns, and user preferences.

With regard to content, a 2021 report from Commonsense Media looked at representation in the media that children consume, important given that the majority (70%) of parents surveyed wanted their children to be exposed to more diverse images (with higher percentages among parents of color). Parents also wanted media content to expand and be inclusive of other kinds of diversity (individuals with physical, neurological, or learning disabilities, those with diverse body types, and those from different socioeconomic levels). Parents' media concerns stemmed from the way they felt people were represented in programming to their children. Many parents perceived White people as more likely to be portrayed in a positive light compared to the portrayal of Black, Hispanic/Latino, and LGBTQIA+ individuals.

Learning and Technology



https://medium.com/literate-schools/technology-in-the-classroom-7e23904da6d7

Schools have long integrated multimedia and interactive media to encourage collaboration, creativity, and exploration, and to connect with students at a distance. Greater attention to educational technology has occurred in the last 30 years as computers and the internet, then laptops, then Chromebooks, and now tablets, SMART boards, and smartphones are used in the classroom, and as teaching through virtual environments complements and sometimes replaces face-to-face instruction. Reviews of the research indicate that, when used appropriately, instructional technology can enhance feedback and communication with students, and motivate peer collaboration, individual creativity, and self-expression (Hamilton & Hattie, 2021). UNICEF's 2022 What Makes Me? report identifies learning technology as a successful modality for children's active and multisensory work that promotes core capacities. Students are likely to continue interactions outside of school, and parents can feel more engaged and involved.

Research also indicates that devices and applications are merely tools; the quality of the teaching with these applications is key to effective learning. Research reviews about instructional technology and learning report that the motivation to learn is key. Instructors are critical to this motivation — in the ways in which they adapt technology through learner-centered approaches, emphasize how people learn, differentiate and individualize instruction, and use technology to facilitate learning processes (p .195, McKnight et al., 2016). In addition, teachers who use instructional technology find their work to be more efficient — particularly in student communication and grading homework — giving them more time to focus on instruction. How well teachers implement instructional technology is greatly dependent on their ability, training, and resources (discussed further in Chapter 11, and in Hamilton & Hattie, 2021).

"From the plethora of media comparison research conducted over the past 60 years, we have learned that it's...the instructional methods that cause learning. When instructional methods remain essentially the same, so does the learning, no matter which medium is used to deliver instruction" (Clark & Meyer, 2011, p. 14; as cited in McKnight et al., 2016, p. 195).

The wider infrastructure of schools can create a culture that integrates technology as a pedagogical tool and embraces teaching strategies with technology. Associations like ISTE (International Society of Technology in Education, iste.org) offer tremendous resources, learning opportunities, and community forums for teachers to identify materials and strategies for effective instruction. Standards for teaching training and licensing and for school integration provide guidance for the entire field of formal pre-K-12 education in the U.S. and globally.

Possible pitfalls of educational technology

As with most issues, however, learning technologies in education are not always the ideal solution. A significant challenge is that of **access**. Individual households, schools, and school districts vary by geography and income in their ability to ensure children's access to devices and the internet (Hamilton & Hattie, 2021). The ability of parents and educators to support children's learning with new technology also varies greatly. An example of this is the software Prodigy™, with English and math games for children. While it provides a fun and immersive experience, families and schools may be unable to upgrade children's free accounts to a premium (cost) version, marketed to users. Using a premium version entitles children to exclusive rewards, leaving those unable to upgrade to feel like they are missing out. Groups like Commonsense Media recommend that schools jointly create community strategies with families to make decisions that benefit children while being balanced with cost considerations.

Privacy and data sharing are other issues with learning technologies used by schools (Lieberman, 2020). When selecting software for children's learning, schools vet quality, cost, usability, and security. They are obligated to let parents know how student data is being used, regardless of where teaching occurs. Laws such as the Family Educational Rights and Privacy Act (FERPA) and the Children's Online Privacy Protection Act (COPPA) offer guidance when selecting software. Yet the rush to putting lessons online during COVID-19 and as schools provide more distance learning options on tight budgets can mean using free programs that are less transparent in their practices. In 2020, Education Week reported that "Most U.S. states earned a 'C' or lower grade from a 2019 survey of student data privacy protections by Kiesecker's organization and the Network for Public Education." As discussed in Chapter 12, school districts take children's privacy and data use from education software seriously and offer policies on their websites, in school community handbooks, and in teacher training. It is essential that education technology companies be consistent and clear in their policies, and adhere with legal tenets of privacy laws.

Access to learning technologies

Issues of children's access and the digital (or knowledge) gap are of worldwide concern. Inequities in device and internet access challenge children's learning and achievement (Katz, 2017; Katz et al., 2018; Perez, 2021; Resta, 2020; Resta et al., 2018; Zhang & Livingstone, 2019). Differences in access affect children's participation in learning and at school, the creation of valuable social connections, and the forging of a unique identity. Lack of access also adds a disadvantage to children with special needs, who already struggle to find technologies with necessary accommodations. Schools may distribute devices, routers, and wifi hubs, provide additional technology coaching, and train teachers to be sensitive to equity and access needs when integrating technology in coursework (Perez, 2021). And a new bill (Emergency Broadband Benefit) from the U.S. Congress offers short-term assistance to pay for internet access for families and students (US FCC, 2021). On the public awareness side, children's media scholars Livingstone and Blum-Ross (2020) advocate that a step toward equity is to move our collective concern away from screen time quantity and more strongly embrace quality dimensions of technology use for active learning, socialization, and development. This can shift attention to the need for all children to have access to beneficial technology.

Children with Special Needs

Technologies can aid reading for children with vision challenges, and vocabulary and problem-solving skills for children with developmental delays (Livingstone & Blum-Ross, 2020). Adding Wii games for children on the Autism spectrum benefits physical development, learning social cues, and developing social skills (Ernest et al., 2014). Commonsense Media reports that videogames can be tailored to specific needs, and games produced for general populations can aid children in acquiring communication skills, providing them ways to challenge themselves and learn how to ask for help.

Beyens et al. (2018) summarized a review of four decades of research on technology's impact on attention deficit hyperactivity disorder (ADHD) to indicate only a marginal relationship, calling it more "theoretically than empirically grounded" (p. 9878). They called for continued research into individual differences that affect susceptibility (e.g., sex, temperament, age) and especially into context and condition variables that may play a role in technology selection, content exposure, and use, including parent variables. "Research has shown that parents factors, such as parental ADHD, parental temperament, parenting stress, family conflict, unresponsive parenting, and chaotic parenting are negatively linked to ADHD behaviors, and responsive parenting can suppress ADHD-related behaviors" (p. 9879).

Recommendations for middle childhood and adolescence

The American Academy of Pediatrics offers these recommendations for parents of children and adolescents (which includes children in middle childhood):

- Monitor access to devices and use, on balance with physically healthy practices for brain and body.
- Treat media as other environments: set limits, monitor for safety and well-being.
- Be a good role model.
- Promote the value of face-to-face communication.
- Provide warnings for safety (privacy, predators); keep lines of communication open if children/teens experience concerns.
- Focus on appropriateness and quality of engagement.
- Make and communicate media plans with all family members.
- Understand limits and potential harms. Do your homework on apps and games children and teens use.

During this age period, many children will seek and/or acquire a smartphone. Is there an appropriate age for children to have a smartphone? Or is a determination based on knowing the risks and rewards and on a child's display of the ability to responsibly handle one? Children's smartphone ownership is discussed later in the chapter. And parent engagement through consistent and attuned communication with children in middle childhood and late, is key to their healthy use. As noted, children ages 6–12 will be exposed to messages and images and information that they don't understand. It is essential that they have at least one adult they feel safe to go to for questions and conversation about technology.

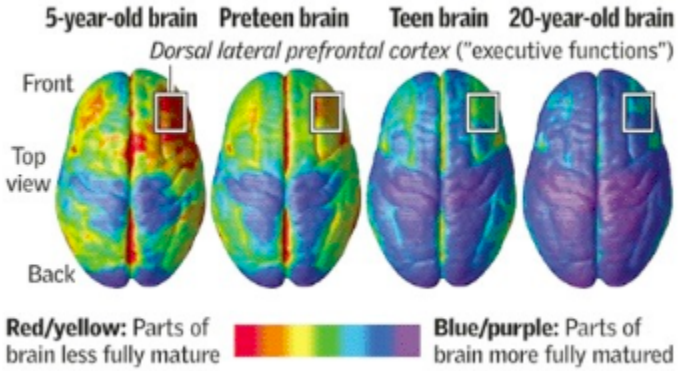
Adolescents and Technology

"Girls use computers at the Shaheed Mohamed Motaher Zaid School" by World Bank Photo Collection is licensed under CC BY-NC-ND 2.0.

Development overview

The developmental changes that occur during adolescence are so dynamic and pronounced that development scholars divide the period into approximate age ranges: early adolescence (11–14), middle adolescence (14–17), and late adolescence (17–20).[10] The significant activity of puberty can affect the expression of primary and secondary sex characteristics, hormonal expression leading to an interest in having sex, body changes, skeletal growth, and continuation of brain development (though it's not complete until later into early adulthood; see figure below).

10. See the American Academy of Pediatrics' division of the stages, with developmental information here: https://www.healthychildren.org/English/ages-stages/teen/Pages/Stages-of-Adolescence.aspx



Neuro imaging scan of brains at different ages. National Institute of Mental Health; Paul Thompson, Ph.D., UCLA Laboratory of Neuro Imaging

Adolescents' contexts are, primarily, in middle and secondary school, exercising their cognitive abilities and continuing peer associations. Expression of identity is key and can encourage the joining of "cliques" and crowds as a way to fit in and understand oneself. The growing sense of confidence in oneself can also unleash under-confidence, expressed as power through bullying others.

Overview of developmental achievements in adolescence

- **Physical**: Brain development continues (still not complete), body changes in puberty affects hormonal reactions, and interest in sex; opportunities for high-risk behaviors; skeletal and muscle growth is completed.
- **Cognitive: T**hinking becomes more reasoned and abstract; hormonal response can generate high-risk behavior.
- **Socio-emotional:** Peer associations, romantic associations; looking ahead; taking on added responsibility in jobs;, anticipating life post-secondary school (military, college, employment, etc).
- **Psychological:** Identity development (as separate from family); hormonal responses affecting mood; awareness of mental health challenges.

Technology use

Phones and computers are nearly ubiquitous in the lives of teens, who use them extensively for connections

to friends and family, for schoolwork and jobs, and for daily life tasks. Most (95%) have smartphones, and 80% have a gaming console. A 2022 report from Pew indicates that these percentages have increased since 2015 (Vogels et al., 2022). As noted in Chapter 3, these socioeconomic disparities in technology access had negative implications for children and teens' academic participation during COVID. And use varies by gender and ethnicity. Commonsense Media reports that boys spend more time than girls online, as do teens who report non-white ethnicities. Among 13–18-year-olds, the average total screen time is 8 hours and 39 minutes. Light users are on screens for approximately 2.5 hours/day; heavy users for 13.3 hours/day (Commonsense Media, 2021). And use has increased in recent years. In 2019, teen screen time averaged 7 hours 22 minutes. Commonsense Media reports that the rate of increase is greater in the last two years than in previous years.

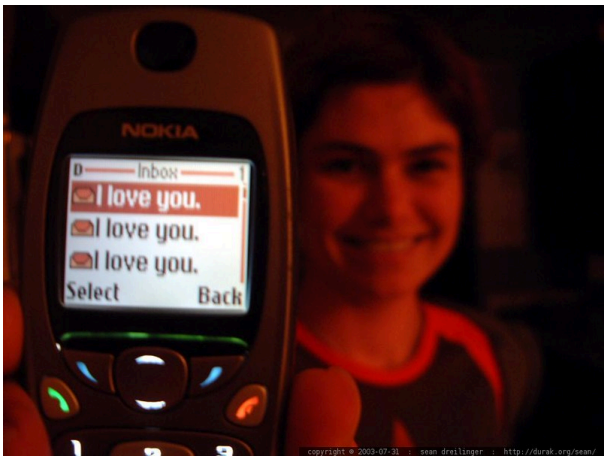
Most teens (95%) have smartphones, and 80% have a gaming console. While the majority of teens in the U.S. report having a computer (90%), those whose parents have less education or income are more likely not to have a computer (Anderson et al., 2022)…Among 13–18-year-olds, the average total screen time is 8 hours and 39 minutes. This is an increase of 1 hour per day between 2019 and 2021.

Teens use a range of social media, with a preference for YouTube, TikTok, Instagram, and Snapchat (Vogels et al., 2022). In just seven years, teen interest in Facebook dropped from 71% to 32% according to the 2022 study from Pew. Boys report more interest in Reddit, Twitch, and YouTube; girls prefer Instagram, Snapchat, and TikTok. While 62% reporting using social media daily, daily entertainment is also sought through streaming videos (77%) and watching television (49%) (Commonsense Media, 2021). Yet even though teens report spending nearly an hour and a half each day on social media, a minority indicate that they like doing so "a lot" (34%). Listening to podcasts as a regular activity is reported by about one-fifth of teens. And gaming is popular with 59% of teens, with active players spending three hours a day on average, and teens in general reporting 1 hour, 46 minutes. The Pew study reports that a majority of teens say their social media use is about right (55%); 36% say it's too much.

Global data on teen technology use is available from the EU Kids Online study and the Global Kids Online study, which track children's use in Europe, South America, countries in Africa, and the Philippines. The EU Kids study follows 9- to 16-year-olds (approximately the middle of the two age groups surveyed by Commonsense Media), and the 2016 report from the Global Kids study featured data from 9–17-year-old children from the Philippines, Serbia, and South Africa, and internet-using children age 13–17 from Argentina. These data offer a more universal understanding of technology use by children and teens, with differences to what is observed in the U.S. based on socioeconomic, cultural, and governmental factors.

For example, in a study of Nigerian teens age 13–18 years old in rural and urban areas, most reported access to

a shared or personal mobile phone, which was the dominant form of internet access (Uzuegbunam, 2019). A minority purchased their own phones (23%); the remainder reported purchases by their families. However, the researcher determined that use was fairly gendered. Technology for personal development and for self-learning was mainly by privileged male youth in urban cities. The teens also reported the use of social media as positive yet, as with other teens, indicated technology's power to distract, expose them to bad messages, and encourage cheating on tests. While some parents do monitor teens' technology use, the research indicated that many parents and teachers lack the skills and literacy to support children's evolving digital practices.



"text messages: i love you. i love you. i love you. dscf6294" by sean dreilinger is licensed under CC BY-NC-SA 2.0.

Texting and using social media for peer communication and for connections with romantic partners are significant for teens. Sexting, or sharing sexual images and language, is fairly common. Madigan et al.'s (2019) research review representing data from the 22 studies in the U.S., Canada, Europe, Australia, South Korea, and South Africa indicated that 8.4% forward a sext without consent, 12% receive a sext without consent, 15% send a sext, and 27% receive a sext. Flirting this way via smartphone (the device used in most cases of sexting) is obviously not common, yet its occurrence is usually consensual. However, sexting laws prohibit sharing personal images of individuals who are minors. Fines and laws can be harsh for those who send sexually explicit or nude photos electronically, whether though text, email, or social media. Some states have specific laws regarding sexting between minors, which are less harsh than those — like Minnesota — whose laws around sexting and minors are related to child pornography. This page provides more information about the statute in Minnesota laws. Writing for Pediatrics (from the American Academy of Pediatrics), Strasberger et al. (2019) cite the data and implications of sexting in teens, and argue for the differentiation of behavior between consenting adolescents and behavior that is clearly in the realm of child pornography and abuse.

Impacts

"General Photos: Solomon Islands" by Asian Development Bank is licensed under CC BY-NC-ND 2.0.

Despite legitimate concerns on behavioral trends observed with teens and technology, as ICT has become ubiquitous in their lives, the majority of teens do not report negative outcomes (Commonsense Media, 2021).[11] Interaction through dating apps, texting, and social media are commonplace and now expected environments for intimate relationships — a healthy part of teens' socialization. James et al. (2017) report that, for 13–17 year olds with a social network profile, the applications used intersect interests across their lives, and contribute significantly to adolescents' identity formation, sense of agency and autonomy, and academic achievement. For adolescents and young adults worldwide, proficiency with technology also means preparation for jobs of the future that will rely on automation (Anderson et al., 2022; Blum-Ross. et al., 2018).

Teens' use of social media is a good example of research findings that are "variable" in being positive, yet qualified. James et al.'s 2017 review of the research identified positive impacts on well-being through self-confidence, self-esteem, being outgoing, feeling less shy, and reporting less depression. This is often due to social media's ability to help teens maintain friendships and meet new potential friends with shared interests. With regard to empathy and narcissism, in general teens display more emotionally empathic communication online than adults, yet they are also more likely to think of their activities online from a self-focused perspective. And during COVID-19, teens who found support online, despite the number of hours they used screens, reported positive mental health, based on a study of 700 11–17 year olds in Peru (Magiss-Weinberg et al., 2021).

As with children in middle childhood, concerns for teens's technology use rest with psychological effects due to social comparison, anxiety, low self-esteem, and being the subject of bullying (UNICEF, 2017). These effects also are more prevalent for teens who are vulnerable. Variability occurs depending on the content of

11. This doesn't include awareness of the dangers of texting while driving. While statistics support distracted driving with phones as an issue for adults as well, teens are less likely to wear a seat belt, and vehicle accidents are a leading cause of death for teens.

what is being shared, the quality and quantity of content, and responses from others. For example, when a social media user seeking support is ignored, the user afeels worse. Research by Commonsense Media (2018) revealed that adolescents age 13–17 who scored lowest on the socioemotional wellbeing scale (SEWs) reported the importance of social media in their lives higher than did other teens; they were also more likely to report being bullied or feeling bad and left out. Recently, a young teen's suicide was attributed by a London coroner to her consumption of self-harm-related social media. Problematic behavior with technology (e.g., feeling addicted to one's phone) can have negative consequences with relationships. And devices such as mobile phones, with the ability to text and access social media at will, can inhibit intimacy and present challenges through the perception of 24/7 connectedness.

concerns for teens's technology use rest with psychological effects due to social comparison, anxiety, low self-esteem, and being the subject of bullying (UNICEF, 2017). These effects also are more prevalent for teens who are vulnerable.

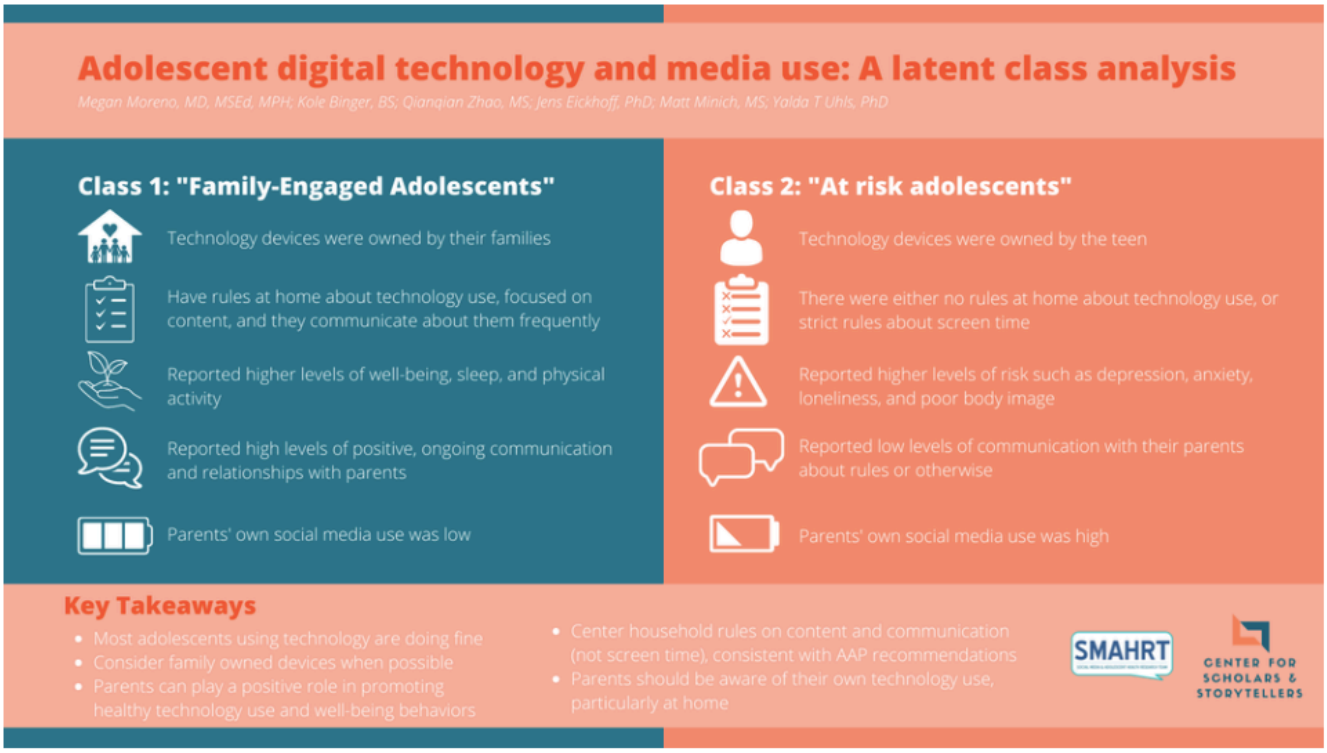
Analyses of literature on videogame violence supports a relationship with players' longitudinal demonstration of violent behavior, even after controlling for previous demonstration of aggression (Prescott et al., 2018). And researchers found a racial component: a strong relationship for White children, a weak relationship for Asian children, and an unpredictable relationship for Latino children. They echo other scholars calling for continued research on factors or individual differences that relate to the results.

researchers encourage widening the scope rather than narrowly targeting technology as the sole culprit in investigations of effects

Additional researchers encourage widening the scope rather than narrowly targeting technology as the sole culprit in investigations of effects. Adolescents face a range of influences on their health and mental health. Writing for Nature, researcher Candice Odgers (2018) reports how teens are faring in the "digital age" by offering a broader view than data linked specifically to phone use. She reports on broad indicators like high school graduation rates and academic achievement, and on downward trends in pregnancy, violence, alcohol abuse, and smoking. As noted in Chapter 1, it's crucial to consider how technology fits into children's and families' lives as a whole. Odgers addresses the debate around benefits and consequences of technology use by teens, and returns to a biological truth: developing organisms will respond in unique ways to their environments, and measured impacts in one ecological domain are likely influenced by influences from another. Indeed, and as noted above, some teens will demonstrate negative impacts from exposure to social media, videogames, time online, and use of their smartphones. Yet Odgers' read of the data is that this reflects "a new kind of digital divide, in which differences in online experiences are amplifying risks among already-vulnerable adolescents." Her recommendations are that we fret less about

technology use and teens as the issue, and focus more on the wider societal influences on their lives that encourage the mental health and academic and behavioral conditions they bring to their online experiences.

Aiding this viewpoint, a recent study with 4,000 teens age 13–18 and their parents (Moreno et al., 2022) identified two "classes" of risk for teen technology use and impact. Family-engaged adolescents reported better well-being, sleep, and physical activity. For these teens there was a tighter family connection in ownership and family communication, and parent technology use (specifically social media) was low. "At-risk" adolescents were those reporting higher levels of depression, anxiety, and poor body image; they were more independent in their technology access and parents' social media use was high. As decades of research on families has observed, sociocontextual stress from living with poverty, unemployment, discrimination, and more creates conditions that pull parents away from their ability to fully attend to children's needs.



Reports such as this help focus on the characteristics of teens for whom technology may be an added vulnerability, while the research into specific effects (for whom, which type of technology, under which conditions) continues.

Expanding our understanding of effects of technology and adolescent development

Groups like the American Academy of Pediatrics in the U.S. bundle recommendations for healthy adolescent

technology use with those for children. These recommendations lean heavily on responsible use, use that is developmentally appropriate, and strong and constructive influence from educators and caregivers. An AAP article specific to medical connectivity with teens recommends applications that are user-centered in their design, address disparities in internet and device access, and are created with an awareness of challenges to data ownership, confidentiality, and data privacy. Their comments close by saying "Pediatricians should neither shun new technologies nor accept them wholeheartedly without review but always advocate for and consider the best interests of adolescents by carefully balancing the risks and benefits of using and recommending these technologies to optimize health outcomes, including physical, emotional, and social well-being, in this vulnerable population."

The findings of the SMAHRT and Center for Scholars and Storytellers study described above underscore the heavy contributions by family in shaping teen's technology use and outcomes. It recommends that devices are family-owned rather than individually owned, that households maintain patterns of communication about technology use, that parents are aware of their own use as they serve as models of behavior, and that a family focus on technology begins early in a child's life.

James et al. (2017) and Hamilton et al. (2021) make the following research recommendations to better understand use of technology in general and applications like social media specifically:

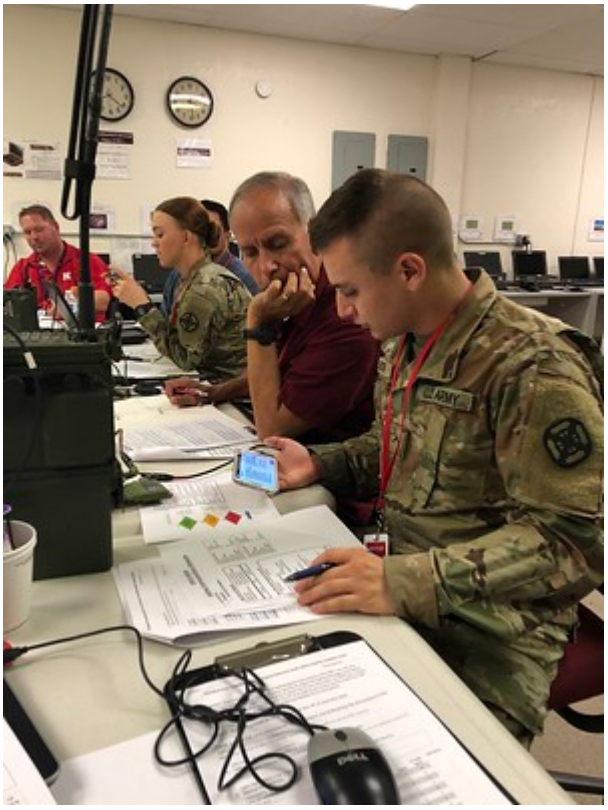
- Individual differences in media use and its effects (who)
    - Example research question: How does social media affect teens and communities differently on the basis of the intersection of different identities (e.g., race, gender) and context (e.g., home, peers, school, nation)?
- Timing and fluctuations of media use and its effects (when)
    - Example research question: How do patterns of social media use fluctuate across individuals? Are teens using social media more at different times?
    - How, where, when, and for whom does digital media use support positive well-being outcomes, social connectedness, and empathy?
- Media content, tools, functions, and meanings (what)
    - Example research question: What specific social media experiences are teens having since COVID-19?
    - What kinds of digital technologies promote patterns of use that support positive

well-being, social connectedness, and empathy?

- Materials for studying media effects (how)
    - Sample methods of interest: objective measures for social media; longitudinal, experimental, and intensive monitoring study designs
    - Moving beyond correlational and self-report studies to gain more accurate insights into youth's uses of digital media and their outcomes
- Including the wider lens:
    - How can parenting, educational supports, and policy further support known positive well-being and social connection outcomes?

Young Adults and Technology

Development overview



"Precision Fires-Dismounted (PF-D) Quick Reference Guide (QRG)" by peoc3t is licensed under CC BY-ND 2.0.

The post-adolescence period is a dynamic one, perhaps best characterized as "launching." After 18 years under direct care and supervision in the family home, most young adults transition to living separately and independently, fulfilling the expectations that they can accomplish the responsibilities and decision-making of adulthood and gain financial independence. The Urban Dictionary might boil this down to "adulting." For many, this means post-secondary education for job training or a college degree, military service, taking a "gap" year to explore the world, moving directly into employment, and/or starting a family. Yet events can conspire to challenge individual plans. Consider the draft to military service in Vietnam in the late 1960s (this affected many young men, including the author's brothers and cousins) or, more recently, economic shifts and COVID-19. At no time since the Great Depression have young adults lived at home in the U.S. in such high numbers (Arundel & Ronald, 2015; Fry, et al., 2020).

Arnett has characterized young adulthood as a unique period of human development. It overlaps with adolescence and adulthood, and is finely indicative of developmental transitions in identity, role responsibility, and cognitive and physical change post-childhood as they overlap from adolescence through to late adulthood (Arnett, 2007). In fact, the technological revolution has motivated a deeper understanding of this age period as unique from adolescence and full adulthood. Successful launching can result in a healthy sense of oneself as separate and unique, or "individuated." In completing this process, the individual understands and forges

Consider what it means to be an adult. What would you be able to do that indicates that you are self-sufficient? Emotionally and socially, what do you imagine adulthood to be like? What role might technology play as you develop skills and abilities, identities, and connectedness that indicate adulthood?

relationships (especially with parents) that respect the sense of separateness, yet maintain the sense of belonging and connections.

Technology use

To a large extent, young adults age 18–29 continue technology use patterns established in their earlier years (Mollborn et al., 2021). So given teens' interest in social media, gaming, and communication, it's not surprising that young adults are more likely than their older adult counterparts to be active and comfortable with use in daily life, including schooling and for work (Vaterlaus et al., 2019). The majority of young adults (71%) use Instagram, which is significantly more popular than with older age groups. YouTube is popular with nearly all (95%) young adults, though high percentages of nearly all adult age groups appear to view YouTube (Pew, 2021; Schaeffer, 2021).

Among young adults, technology use varies when used for academic and non-academic purposes (Swanson & Walker, 2015). And variation occurs depending on who the young adult is talking to. A recent study by Lee and Dworkin (2022) identified four communication group types among digital media users connecting with mothers, fathers, and friends. Those with the friend-oriented pattern were associated with psychological well-being, and the multimedia group associated with stronger social well-being. Chapter 7 further discusses technologically facilitated relational dynamics in families with young adult members.

Young adults are a well-studied population when it comes to their technology use, given that many technology scholars are in higher education and have easy access to 18–24-year-olds who attend college and can be research participants. In part, this challenges our full understanding of the age group, as it skews towards a portion of young adults. According to the National Center for Education Statistics, 40% of those age 18–24 enroll in college (NCES, 2022). From a family perspective, studying young adults in college is beneficial to understand the role technology plays in family connectedness during a time of formation of a separate identity (e.g., Lee et al.'s 2009's discussion of the "electronic umbilical cord"). Going to college represents a normative shift in context and in responsibilities that may encourage changes in technology use.

Mollborn et al. (2021) argue for a lifecourse perspective when exploring technology use in this age group, beyond assuming the continuation of behavioral patterns from adolescence. They determined that prior patterns of parenting had a significant influence on young adults' technology use. Rather than having a discrete influence on frequency of technology use at a particular age (e.g., parent presence encouraging young adults to use technology more frequently for parent-child communication), parents' greater impact came through from the ways their prior parenting messaging helped shape young adults' emotional response to the use of technology. Indeed, the researchers found that context and demographic factors were quite malleable when examining predictors of use in young adulthood.

Impacts

Research generally supports technology's role in aiding the relationship between young adults and their parents, grandparents, and siblings, and that multiple types of devices may be used in maintaining relationships (validating media multiplexity theory) (Hessel & Dworkin, 2018). Young adults appear to support their individuation by the strategic use of applications and devices that are both more and less familiar to parents to maintain family and other connections, respectively. Male and female college students with problematic mobile phone use show weaker relationships with their parents and their peers (Lepp et al., 2016). Still, Molvin et al. (2021) observe that methodologies used to understand technology's actual impacts in this age group may need to be modified to allow for more individualized perspectives. They note, "As traditional role-based markers of adulthood have become more variable and difficult to attain, [methods may need to capture] self-focused understandings to achieve an internal sense of becoming adult."

Challenges with cyber-victimization continue into young adulthood. Holmgren et al. (2020) examined experiences with cyber-victimization (i.e., being the recipient or victim of hurtful or mean online messages) in a sample of college and non-college young adults. One-fifth reported experiences with cyber-victimization, and within that group, significant relationships between cyber-victimization and lower levels of social and emotional wellbeing, and higher levels of externalizing and internalizing behavior. This suggests that when these experiences occur through online behavior, they can disrupt the young adult's ability to form social capital.

Recommendations to date

Unlike with other age groups, recommendations from researchers and scholars for safe and healthy technology use among young adults are skewed to a set of the population. The dominant focus on young adults in college indicates the need to widen the scope to be more fully representative of technology use and impacts across young adulthood. Similarly, setting-specific recommendations for young adults usually focus on college/post-secondary education (e.g., Educause, 2018).

> What are your recommendations for healthy technology use in young adulthood? How would they be the same or different than when you were in high school?

In the undergraduate course that inspired this text, young adults (students in the course) offered a list of recommendations on healthy technology use for their age group. While they are in college, they also represent a wide range of life experiences, cultures, expectations for their futures, and socioeconomic backgrounds. In their recommendations, they encouraged young adults to consider:

- the life challenges and benchmarks of adulthood that they seek (e.g., financial independence, employment after college),
- the relationships they want to sustain (e.g., family) or acquire (e.g., a committed partner), and
- the general meaning of technology in their personal lives and the ways it operates to support physical, cognitive, psychological, and socioemotional growth (or not).

As you can see from this summary of group contributions, it can be hard to condense recommendations for self (personal), self (social),and self (professional/student) into a cohesive list.

Special considerations for children and teen technology use

The COVID-19 Pandemic

In the spring of 2020, the COVID-19 pandemic closed schools and universities worldwide, requiring that children and teens, like many of their parents, continue work and "do school: online and usually from home. Pandemic conditions continued through the 2020–2021 school year, easing up to some extent with a slow return to "normal" face-to-face or hybridized operations during the 2021–2022 school year.

What the pandemic conditions meant to children's development and learning during the quarantine and long after is a question that researchers will be exploring for decades to come. Specifically, those interested in children's technology use are answering questions about their use, shifts in behavior, effects on school participation and learning, effects on development across all domains, impacts on social relationships (including family relationships), and much more. Already there is evidence based on access to technology and on economic differences.

> Those reading this book will be quite familiar with the experience of life during COVID-19 (and are encouraged to share it and talk about it with others).

Technology use during COVID-19

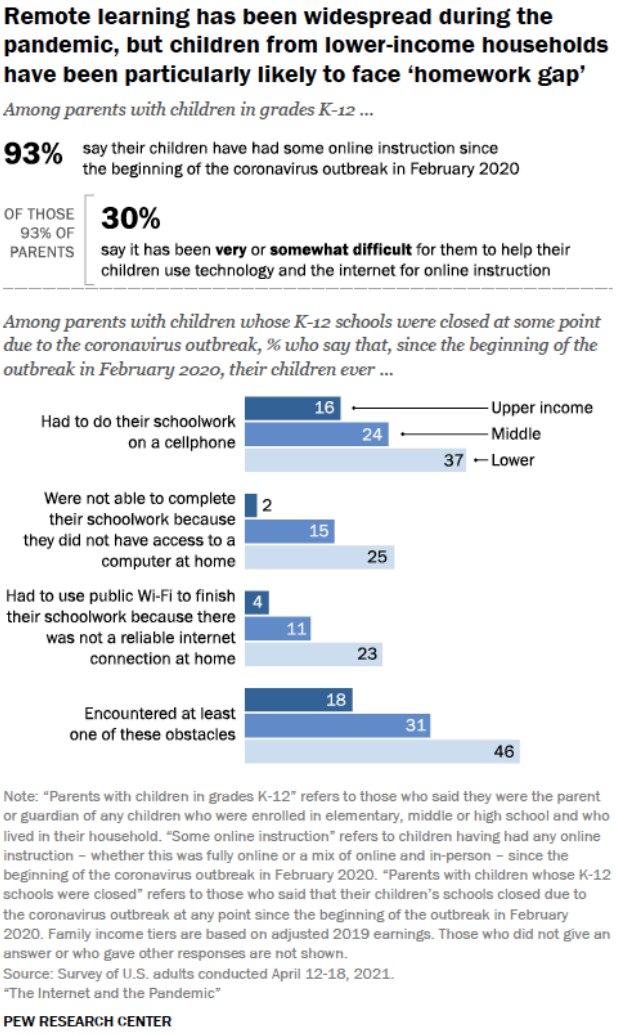
Parents reported that children's screen time increased during COVID-19, and some reported that their monitoring and moderating of that time decreased (McClain et al., 2021). Among parents with children in kindergarten through 12th grade, 72% reported their children spending more time on screens during the pandemic. Outside of the time children spent with technology for schools, when parents considered the other

time their children were online, 39% said that their enacting rules decreased. For the majority of the sample (43%), the rules didn't change.

Only about one in five adults ages 18–29 say they feel closer to friends they know well compared with before the pandemic. This share is twice as high as that among adults 50 and older. Adults under 30 are also more likely than any other age group to say social media sites have helped a lot in staying connected with family and friends (30% say so), and about four in ten of those ages 18–29 say this about video calls. Screen time affected some negatively, however. About six in ten adults under 30 (57%) who ever made video calls during the pandemic say they at least sometimes feel worn out or fatigued from spending time on these calls, and about half (49%) of young adults say they have tried to cut back on time spent on the internet or their smartphone.

School participation and learning technology

Undoubtedly, participation in school during COVID-19 was more challenging for children in households with less income. This chart from Pew Research (McClain et al., 2021) reveals the technological challenges faced by children based on family income. Adequate wifi and devices were issues for children. A sizable portion of parents also reported being unable to help their children with homework.



More evocatively, Hillman (2020) asserts that families' experiences and children's learning from school involvement during COVID-19 can help us reimagine education and move away from traditional classroom and teacher-led systems to the kind of connected learning (or learning webs) that address individual needs and interests:

> Ultimately, we must re-position the role of school as a place that not only makes but also lets learning happen. We need to re-think children's learning goals and expectations. We need to reimagine the kind of curriculum that they need, to not only the current circumstances but also unimagined futures shaped by new norms of socializing, working and learning that we have yet to design and get used to.

Commonsense Media offers guidelines to families to support children's learning and the overall amount of screen time when their school is partly or fully online.

Mental health impacts

Reports of children and teens' mental health during COVID-19 indicated that, for many, quarantine conditions exacerbated depression, anxiety, feelings of isolation and loneliness, and more. Not surprisingly, many turned to social media for social connectivity and entertainment, which may have only exacerbated issues, particularly when users were exposed to hate speech and bullying. A report by Commonsense Media, Hopelab, and the California Health Care Foundation investigated this issue, finding a higher prevalence of depression among LGBTQ+ youth, and reporting that those with mental health challenges were more likely to use social media (Rideout et al., 2021). Yet they also reported the constructive ways in which teens used the internet and social media to find information to support their mental health, to use telehealth options, and as an outlet for personal expression.

Getting a smartphone

A decision facing many households is when to get a child a smartphone. Most parents (73%) believe that it's acceptable for children 12 and older to have a phone (Auxier et al., 2020). Nearly the same number (71%) perceive that widespread use of smartphones could cause more harm than benefit for children (Auxier et al., 2020). Yet the prevalence of children with phones at earlier ages is high. Families who get phones for children before age 13 do so largely so that they can get in touch with their child, and their child can easily get in touch with them (Auxier et al., 2020). Most parents also want to track the whereabouts of their child for safety. In families where parents are separated, phones can be ways to coordinate with children between households. About 25% do it for the child's entertainment (Auxier et al., 2020), and a very small minority (6%) give into peer pressure from other families giving their children phones or from peers who encourage a child to have a phone.

"LG전자, 고성능 스마트폰 내세워 북미시장 공략" by LGEPR is licensed under CC BY 2.0.

Should there be an age policy regarding when children can possess a smartphone? Age policies are set for children's interaction online (e.g, COPPA), in movie ratings, for when teens can drive, vote, and purchase alcohol, and in any number of policies and laws for their and society's well-being. Children under 12 primarily use phones to text, and about half download apps, play pre-installed games, access websites on the internet, and do live video calling (Neilson, 2017). Yet there are warnings about children being exposed to sexting and pornography at early ages (Chen, 2016), and about exposure to screens in ways that interrupt sleep (Commonsense Media 2020). If we are to believe Twenge's research, exposure to smartphones will encourage children's depression, weaken academic performance, and delay interest in normative tasks of adolescence like learning to drive. Unlike family technologies like televisions and computers that can be located in common areas, smartphones are mobile and can be used anytime, anywhere.

Yet as reported earlier, Odgers (2018) questions whether negative effects reported for teens' use of technology are not actually indicative of exacerbated consequences of teens' wider social and societal experiences. And studies that observe family or cultural factors in establishing screen use by children and teens call to question not only the level of impact (on the individual), but the source of influence (e.g., individual behavior, family, school). A number of experts assert that a specific age is not a primary factor in considering when to give child smartphone, but rather how parents and families use technology, set boundaries and rules, and tailor to the

unique needs and interests of the child (Anderson & Jiang, 2018; Chen, 2016; McInerny, 2017). Or might it be that smartphone ownership can be similar to setting a policy "sliding scale" based on child age for staying home alone. For example, a Dakota county (MN) law concerns the ages at which children can be left alone as a gradation of time (e.g., children 7 and younger not alone for any period; children 10-13 alone for fewer than 12 hours).

The recommendations listed below are paraphrased from a post by the Harvard School of Education Usable Knowledge site (When to Give Your Child a Smartphone). They have been arranged to address sensitivity to the individual child, the family context, and wider social influences.

- **Cater the rules to each child, and allow the rules to evolve as your children age**. Each child is unique in their developmental abilities and interests. Some are interested in connecting with others using a smartphone; others are not. Some may be demonstrate responsibility for the care of an item like a smartphone, including what it exposes the child to, and others may not. Knowing your individual child will be an excellent guide to their ability, interests, and need for a phone.
- **Talk about technology with children.** Build awareness and help children learn how to regulate their relationships with devices. Smart phones are only one device; there are many available to children. The conversation about how children see technology being used in their school, home, and friend environments can start early. Introducing responsible and ethical device use is also an opportunity for education. This will give them a voice in setting rules and being accountable.
- **Start young.** As conversations about other dimensions of safety and responsibility start early and develop with the child, so too can the safe and responsible use of technology. This helps put children in the mindset of wanting to learn more and to share their knowledge with others.

Family level

- **Family values**. Phone use in and out of the house by all members, and child phone ownership, should reflect the family's values. Family members can jointly establish rules that reflect the interests of all.
- **Understand options**. Knowledge of different types of technologies available to children and families can aid parents in knowing how to control access and keep children safe.

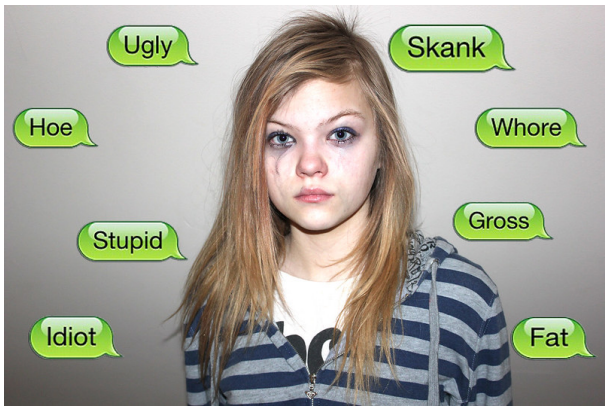
Having options available during the conversation about phone use enables parents and children to find more tailored solutions. Commonsense Media offers a guide to setting up the child's phone.

- **Modeling behaviors.** Children learn through observation and parental modeling of phone use, so parents should model appropriate technology usage. This includes digital ethics, use of devices at home, and use while in the presence of others. Samual (2017) observes that parallel to the data linking phone introduction to negative consequences among children is data showing the uptake in phone use by parents. They ask if the negative consequences seen in children may relate to their parents being distracted.
- **Texting your child.** Parent behavior around texting can do more than model patterns to emulate; it also can directly impact the child's space and be a distraction or impinge on their sense of agency if it exceeds what children are comfortable with. Relatedly, divorced and separated parents can be conscientious about phone use by the child as being private, and not as a tool for indirect communication to the other parent.

Community level

- **Understand child's needs in school and the community.** Smartphones are used for many functions by children and teens besides texting and social media alone. Computers, applications, and other media devices also figure into children's learning and social ecology. Having an awareness of the range of ways that technology is used in the child's evolving life is essential for families to have open discussions about shared use, use in the household, and ownership.
- **Participate in policy and advocacy on smartphone practices.** An added recommendation is for parents and children to be involved in the settings that affect their use, and the impacts of that use. This can mean school, institution, or organization policies, and addressing governmental and industrial actions that establish and maintain laws regarding technology safety for children.

Cyberbullying



"Cyberbullying, would you do it?" by kid-josh is licensed under CC BY-NC-SA 2.0.

According to the Cyberbullying Research Center, cyberbullying is the "willful and repeated harm inflicted through the use of computers, cell phones, and other electronic devices" (from Bullying Beyond the Schoolyard: Preventing and Responding to Cyberbullying). Elements of cyberbullying include the following:

- Willful: The behavior has to be deliberate, not accidental.
- Repeated: Bullying reflects a pattern of behavior, not just one isolated incident.
- Harm: The target must perceive that harm was inflicted.
- Use of computers, cell phones, and other electronic devices: This, of course, is what differentiates cyberbullying from traditional bullying.

And a child may be a victim of cyberbullying if they:

- unexpectedly stop using the computer,
- appear nervous or jumpy when an instant message, text message, or email appears,
- appear uneasy about going to school or outside in general,
- appear to be angry, depressed, or frustrated after using the computer,
- avoid discussions about what they are doing on the computer, or
- become abnormally withdrawn from usual friends and family members.

A review of research over the period of 2015 to 2019 identified an increase in the prevalence of cyberbullying victimization (Zhu et al., 2021).

A review of research over the period of 2015 to 2019 identified an increase in the prevalence of cyberbullying victimization (Zhu et al., 2021). The researchers examined studies representing countries and regions including the U.S., Europe, and East Asia. Victimization reports ranged from 14 to 58%, with verbal violence as the most common type of cyberbullying. Other types of violence included group bullying, impersonation, account theft, and visual bullying (sharing images of others). Lynott (2020) reported that, during COVID-19, two-thirds of teens in Ireland were bullied through private chat apps like WhatsApp. Risk factors related to cyberbullying victimization or perpetration included demographic

characteristics such as age (older adolescents as bullies), gender (girls are more likely to be victim and bully), and past experience (those who were bullied are more likely to bully). Other factors offer mixed results. While some studies, for example, report that non-white students are less likely to engage in cyberbullying, others don't find this trend. Other risk or protective factors studied include geographic location (e.g., living in urban environments), technology behavior (e.g., time online) and mental health status. Parenting and the parent-child relationship appears key to both behavior and risk, with children who have strong communication with parents and a secure parent-child relationship less likely to bully and experience consequences of being a victim.

The researchers caution about the correlational nature of the existing research and the need for more causal mechanisms to be determined. They also identify systemic approaches to address cyberbullying. Individual action starts with addressing adolescent emotional management capabilities, and with parents, schools and institutions support the development tools tailored to the digital environment and digital capabilities. Organizations such as Commonsense Media and the Cyberbullying Research Center offer guidance for the prevention of cyberbullying and constructive practices to address it.

At a macro or policy level, violence that occurs in virtual environments has encouraged new understanding of and reframing old laws. This lawsuit against a school district, brought by the parents of a young woman who committed suicide after being cyberbullied, is indicative of situations calling for attention to cyberviolence. This map of the U.S. provided by the Cyberbullying Research Center (updated in 2017) indicates laws related to criminal sanction (e.g., assault statutes), school sanction (e.g., allowing the school to discipline), school policy (e.g., allowing the school to have bullying policies), and off-campus activities (allows the school to intervene in cases of bullying off campus that contribute to classroom disruption). Yet as indicated by this article about Chicago schools' attempt to protect students from violence by monitoring social media, question of privacy, the internet, and children's safety are topics of debate.

Privacy (including 'sexting')

Privacy and online safety are major issues facing everyone who uses the internet. Use of online technologies enables telecommunication companies' access to personal data — data that can be collected, tracked, shared, and sold to market products to individuals, leave users open to security threats, and create a digital footprint that individuals have little control over. These issues are particularly critical for children, whose level of development and ability to reason through online threats and seek out protections can leave them vulnerable. They also impact parents and educators who are responsible for children's safety online and who must authorize consent, either directly or indirectly (giving children permission). Commonsense Media reports that online safety is relevant not only to children's use of personal devices and apps, but in schools and from school-issued devices as cybersecurity breaches also occur (2021). The market for children's digital advertising

was $1.2 billion in 2019. The majority (60%) of connected devices don't provide necessary information about how they collect or use personal information. And nearly the same percentage of early teens ages 12–15 believe it's easy to delete their information online.

Although there has been incremental improvement, Commonsense Media reports that " the state of kids' privacy is far below parents' expectations, and products used by children are not nearly as privacy-protecting as they should be" (p. 2). This is largely due to weak privacy-protecting practices by many companies, despite legal requirements. Companies' practices as a whole are inconsistent, unclear, don't define safeguards talent to protect children, or lack a privacy policy. This can lead to distrust by educators, parents ,and school districts. Commonsense Media offers a privacy/safety rating on software, and their report anticipates that ratings will shift depending on companies' compliance with policy changes. They conclude their 2021 report by saying

> Unfortunately, there is still far too little attention paid to the privacy and security practices of technology platforms that affect tens of millions of children on a daily basis. It is vital that educators, parents, and policymakers engage in an open dialogue with companies to build solutions that strengthen our children's privacy and security protections. (p. 4)

Public policies concerning childhood privacy

"GDPR & ePrivacy Regulations" by dennis convert is licensed under CC BY 2.0.

The Children's Online Privacy Protection Act [COPPA, US] and the General Data Protection Regulation [EU] dictate that social networking sites be accessed only by children 13 and older (Blum-Ross et al., 2018). In January 2020, the California Children's Privacy Act went into effect. This provides more stringent protections than COPPA related to notice and consent, children's rights, enforcement, and other items,

making it closer to the protections offered by the General Data Protection Regulation (GDPR). Recently developed, the 5 Rights Foundation advances protections for children's well-being, particularly as article 25 of the UN's Convention on the Rights of the Child extends children's rights to online environments. Privacy principles for children recommend that children not be tracked or profiled online, nor subject to ads based on their online activity; that children be able to easily modify the personal information they choose to share; that families educate themselves on privacy options and agree not to share children's information without their consent (Commonsense Media, 2021).

Internet Gaming Disorder

Legitimate concerns have been raised about videogames fostering addiction, seen in approximately 1–3% of those who play videogames. Signs of internet gaming addiction (Petry et al., 2015) may begin to surface in those children vulnerable particularly to the gamification and competitions embedded in the software.

As listed in the DSM-V, the proposed symptoms of internet gaming disorder include:

- Preoccupation with gaming
- Withdrawal symptoms when gaming is taken away or not possible (sadness, anxiety, irritability)
- Tolerance, the need to spend more time gaming to satisfy the urge
- Inability to reduce playing, unsuccessful attempts to quit gaming
- Giving up other activities, loss of interest in previously enjoyed activities due to gaming
- Continuing to game despite problems
- Deceiving family members or others about the amount of time spent on gaming
- The use of gaming to relive negative moods, such as guilt or hopelessness
- Risk, having jeopardized or lost a job or relationship due to gaming

Under the proposed criteria, a diagnosis of internet gaming disorder would require experiencing five or more of these symptoms within a year.

With this significant overview of child and youth development related to ICT use, we now explore the ways in which technology is used by parents and in support of their parenting.

5.2 REFERENCES

Anderson, M., Faverio, M., & McClain, C. (2022, June 2). How teens navigate school during COVID-19. Pew Research Center: Internet, Science & Tech. Retrieved July 30, 2022, from https://www.pewresearch.org/internet/2022/06/02/how-teens-navigate-school-during-covid-19/

Anderson, M. and Jiang, J. (2018) Teens, social media and technology. https://www.pewresearch.org/internet/2018/05/31/teens-social-media-technology-2018/

Arnett, J. J. (2007). Emerging Adulthood: What Is It, and What Is It Good For? *Child Development Perspectives*, 1(2), 68-73. doi:10.1111/j.1750-8606.2007.00016.x

Arundel, A. and Ronald, R. (2015): Parental co-residence, shared living and emerging adulthood in Europe: semi-dependent housing across welfare regime and housing system contexts, *Journal of Youth Studies*, doi: 10.1080/13676261.2015.1112884

Auxier, B., Anderson, M., Perrin, A., and Turner, E. (2020, July 28). Parenting Kids in the Age of Screens. Pew Internet and American Life. https://www.pewresearch.org/internet/2020/07/28/parenting-children-in-the-age-of-screens/

Barron, B. (2006). Interest and self-sustained learning as catalysts of development: A Learning Ecology Perspective. *Human Development*, 49, 193-224.

Beyens, I., Valkenburg, P. M., & Piotrowski, J. T. (2018). Screen media use and ADHD-related behaviors: Four decades of research. Proceedings of the National Academy of Sciences, 115(40), 9875-9881.

Blum-Ross, A., Donoso, V., Dinh, T., Mascheroni, G., O'Neill, B., Riesmeyer, C., and Stoilova, M. (2018). Looking forward: Technological and social change in the lives of European children and young people. Report for the ICT Coalition for Children Online. Brussels: ICT Coalition.

Blum-Ross, A., & Livingstone, S. (2020, November 10). How families of children with autism greet the Digital future. Parenting for a Digital Future. Retrieved July 30, 2022, from https://blogs.lse.ac.uk/parenting4digitalfuture/2020/11/25/autism-and-the-digital-future/

Bronfenbrenner, U., & Morris, P. A. (2007). The bioecological model of human development. Handbook of child psychology, 1.

Casimiro, C., and Nico, M. (2018). From object to instrument: Technologies as tools for family relations and

family research. In Casimiro C. and Neves B. (Eds.), Connecting Families: Information and Communication Technologies, generations, and the life course (pp. 133- 156). Bristol: Bristol University Press. doi:10.2307/j.ctv2867xm.14

Chen, B. (2016, July 21). What's the right age to give a child a smartphone. New York Times https://www.nytimes.com/2016/07/21/technology/personaltech/whats-the-right-age-to-give-a-child-a-smartphone.html

Clark, R. C., & Mayer, R. E. (2011). E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning (3rd ed.). San Francisco, CA: Pfeiffer.

Commonsense Media. (2021). The Common Sense Census: Media use by tweens and teens. Retrieved July 30, 2022, from https://www.commonsensemedia.org/sites/default/files/research/report/8-18-census-integrated-report-final-web_0.pdf

Common Sense Media. (2021, October 19).The inclusion imperative. Retrieved July 30, 2022, from https://www.commonsensemedia.org/research/the-inclusion-imperative

Common Sense Media. (2020). How do screens — such as TV and smartphones — affect my kids' sleep? Retrieved July 30, 2022, from https://www.commonsensemedia.org/articles/how-do-screens-such-as-tv-and-smartphones-affect-my-kids-sleep

CommonsenseMedia (2018). Social media, social life. Teens reveal their experiences. San Francisco: Retrieved from https://www.commonsensemedia.org/research/social-media-social-life-2018

The Common Sense Census: Media use by kids age zero to eight. Common Sense Media. (2017). Retrieved July 30, 2022, from https://www.commonsensemedia.org/research/the-common-sense-census-media-use-by-kids-age-zero-to-eight-2017

CommonsenseMedia (2016). The Commonsense Census: Plugged-in Parents of Tweens and Teens, Commonsense Media. Retrieved from https://www.commonsensemedia.org/research/the-common-sense-census-plugged-in-parents-of-tweens-and-teens-2016

Coyne, S. M., Radesky, J., Collier, K. M., Gentile, D. A., Ruh Linder, J., Nathanson, A. I., Rasmussen, E. E., Reich, S. M., and Rogers, J. (2017). Parenting and digital media. *Pediatrics*, 140, s112–s116. doi:10.1542/peds.2016-1758N

Coyne, S. M., Stockdale, L., and Summers, K. (2019). Problematic cell phone use, depression, anxiety, and self-regulation: Evidence from a three year longitudinal study from adolescence to emerging adulthood. *Computers in Human Behavior*, 96, 78-84.

De Moor, S., Dock, M., Gallez, S., Lenaerts, S., Scholler, C., & Vleugels, C. (2008). Teens and ICT: Risks and Opportunities. Retrieved from http://www.belspo.be/belspo/fedra/TA/synTA08_nl.pdf.

Ernest, J. M., Causey, C., Newton, A. B., Sharkins, K., Summerlin, J., & Albaiz, N. (2014). Extending the global dialogue about media, technology, screen time, and young children. *Childhood Education*, 90(3), 182–191. https://doi.org/10.1080/00094056.2014.910046

EU Kids Online. (2018). http://www.lse.ac.uk/media-and-communications/research/research-projects/eu-kids-online

Fry, R., Passel, J. and Cohn, D. (2020, September 4). A majority of young adults in the U.S. live with their parents for the first time since the Great Depression. Pew Research Center. https://www.pewresearch.org/fact-tank/2020/09/04/a-majority-of-young-adults-in-the-u-s-live-with-their-parents-for-the-first-time-since-the-great-depression/

Gottschalk, F. (2019). Impacts of technology use on children: Exploring literature on the brain, cognition and well-being (OECD Education Working Papers, NO. 195). Paris, France: OECD Publishing. Retrieved from https://doi.org/10.1787/8296464e-en

Hale, L., Li, X., Hartstein, L. E., & LeBourgeois, M. K. (2019). Media use and sleep in teenagers: What do we know? Current *Sleep Medicine Reports,* 5(3), 128–134. https://doi.org/10.1007/s40675-019-00146-x

Hamilton, A., & Hattie, J. (2021). Not all that glitters is gold – cognition education group. Retrieved July 30, 2022, from https://cognitioneducationgroup.com/wp-content/uploads/2020/11/Not-All-That-Glitters-is-Gold.pdf

Hamilton, J. L., Nesi, J., & Choukas-Bradley, S. (2021). Reexamining social media and socioemotional well-being among adolescents through the lens of the COVID-19 pandemic: A theoretical review and directions for future research. Perspectives on Psychological Science, 17(3), 662–679. https://doi.org/10.1177/17456916211014189

Hessel, H., & Dworkin, J. (2018). Emerging adults' use of communication technology with family members: A systematic review. *Adolescent Research Review*, 3(3), 357-373

Hillman, V. (2020, May 5). Parenting and learning in a time of global pandemic: What policy makers and school leaders should do for children's education right now and consider the future. Parenting for a Digital Future. Retrieved July 30, 2022, from https://blogs.lse.ac.uk/parenting4digitalfuture/2020/06/17/learning-during-pandemic/

Holmgren, H. G., Dworkin, J., & Keyzers, A. (2020). Associations between cybervictimization and well-

being in emerging adulthood. *Cyberpsychology, Behavior, and Social Networking*, 23(8), 571–575. https://doi.org/10.1089/cyber.2019.0733

Ito, M., Arum, A., Conley, D., Gutiérrez, K., Kirshner, B., Livingstone, S., Michalchik, V., Penuel, W., Peppler, K., Pinkard, N.... 2020. The Connected Learning Research Network: Reflections on a Decade of Engaged Scholarship. Irvine, CA: Connected Learning Alliance. https://clalliance.org/publications/

James, C., Davis, K., Charmaraman, L., Konrath, S., Slovak, P., Weinstein, E., & Yarosh, L. (2017). Digital life and youth well-being, social connectedness, empathy, and narcissism. *Pediatrics*, *140*(Supplement_2), S71-S75.

Johnston, K., Highfield, K., & Hadley, F. (2018). Supporting young children as digital citizens: The importance of shared understandings of technology to support integration in play-based learning. *British Journal of Educational Technology*, 49(5), 896-910.

Katz, V. S. (2017). What it means to be "under-connected" in lower-income families. *Journal of Children and Media*, 11(2), 241-244.

Katz, V. S., Moran, M. B., and Gonzalez, C. (2018). Connecting with technology in lower-income US families. *New Media and Society,* 20(7), 2509-2533.

Lee, S.-K., & Dworkin, J. (2022). Multiple channels of Communication: Association of Emerging Adults' communication patterns, well-being, and parenting. *Emerging Adulthood*, 216769682110676. https://doi.org/10.1177/21676968211067614

Lee, S., Meszaros, P. S., & Colvin, J. (2009). Cutting the wireless cord: College student cell phone use and attachment to parents. *Marriage & Family Review*, 45(6-8), 717–739. https://doi.org/10.1080/01494920903224277

Lepp, A., Li, J. and Barkley, J. (2016). College students' cell phone use and attachment to parents and peers. *Computers in Human Behavior* 64. 401e408 http://dx.doi.org/10.1016/j.chb.2016.07.021

Lieberman, M. (2020, December 1). Massive shift to remote learning prompts Big Data Privacy concerns. Education Week. Retrieved July 30, 2022, from https://www.edweek.org/technology/massive-shift-to-remote-learning-prompts-big-data-privacy-concerns/2020/03

Lim, S. S. (2016) 'Through the tablet glass: Transcendent parenting in an era of mobile media and cloud computing', *Journal of Children and Media*, 10(1): 21–29. https://doi.org/10.1080/17482798.2015.1121896

Livingstone, S., and A. Blum-Ross (2020). Parenting for a Digital Future. How hopes and fears about technology share children's lives. New York: Oxford University Press.

Livingstone, S., Mascheroni, G., Dreier, M., Chaudron, S., and Lagae, K. (2015). How Parents of Young Children Manage Digital Devices at Home: The Role of Income, Education and Parental Style. London: EU Kids Online.

Livingstone, S., Mascheroni, G., & Staksrud, E. (2015, November 1). Developing a framework for researching children's online risks and opportunities in Europe. LSE Research Online. Retrieved July 30, 2022, from https://eprints.lse.ac.uk/64470/

Lynott, . (2020). Research reveals 66% of children bullied on private chat apps during lockdown. Belfast Telegraph. August 31. https://www.belfasttelegraph.co.uk/news/health/coronavirus/research-reveals-66-of-children-bullied-on-private-chat-apps-during-lockdown-39489984.html

Lytle, S. R., Garcia-Sierra, A., & Kuhl, P. K. (2018). Two are better than one: Infant language learning from video improves in the presence of peers. Proceedings of the National Academy of Sciences, 115(40), 9859–9866. https://doi.org/10.1073/pnas.1611621115

Madigan, S., Ly, A., Rash, C. L., Van Ouytsel, J., & Temple, J. R. (2018). Prevalence of multiple forms of sexting behavior among youth: A systematic review and meta-analysis. *JAMA Pediatrics*, 172(4), 327-335.

Magis-Weinberg, L., Gys, C. L., Berger, E. L., Domoff, S. E., & Dahl, R. E. (2021). Positive and negative online experiences and loneliness in Peruvian adolescents during the COVID-19 lockdown. *Journal of Research on Adolescence*, 31(3), 717-733.

McClain, C. (2022, April 28). How parents' views of their kids' screen time, social media use changed during COVID-19. Pew Research Center. Retrieved July 30, 2022, from https://www.pewresearch.org/fact-tank/2022/04/28/how-parents-views-of-their-kids-screen-time-social-media-use-changed-during-covid-19/

McClain, C., Vogels, E. A., Perrin, A., Sechopoulos, S., & Rainie, L. (2021, September 1). The internet and the pandemic. Pew Research Center: Internet, Science & Tech. Retrieved July 30, 2022, from https://www.pewresearch.org/internet/2021/09/01/the-internet-and-the-pandemic/

McInerny, C. (2017, November 21). Deciding at what age to give a kid a smartphone. KQED. Retrieved July 30, 2022, from https://www.kqed.org/mindshift/49742/deciding-at-what-age-to-give-a-kid-a-smartphone
McInroy, L. B., and Mishna, F. (2017). Cyberbullying on online gaming platforms for children and youth. *Child and Adolescent Social Work Journal*, 34(6), 597-607. doi 10.1007/s10560-017-0498-0

McLeod, S. (2022, March 20) . RE: Current research about the impact of technology on learning outcomes. [Discussion post]. ISTE Connect. https://connect.iste.org/communities

McKnight, K., O'Malley, K., Ruzic, R., Horsley, M. K., Franey, J. J., & Bassett, K. (2016). Teaching in a Digital age: How educators use technology to improve student learning. *Journal of Research on Technology in Education*, 48(3), 194–211. https://doi.org/10.1080/15391523.2016.1175856

Mollborn, S., Fomby, P., Goode, J. A., & Modile, A. (2021). A life course framework for understanding digital technology use in the transition to adulthood. *Advances in Life Course Research*, 47, 100379.

Moreno, M. A., Binger, K., Zhao, Q., Eickhoff, J., Minich, M., & Uhls, Y. T. (2022). Digital Technology and media use by adolescents: Latent class analysis. *JMIR Pediatrics and Parenting*, 5(2). https://doi.org/10.2196/35540

National Institute for Drug Abuse (2022, October 24). Video gaming may be associated with better cognitive performance in children. https://nida.nih.gov/news-events/news-releases/2022/10/video-gaming-may-be-associated-with-better-cognitive-performance-in-children

Navarro, J. (2020). Fortnite: A context for child development in the U.S. during COVID-19 (and beyond). *Journal of Children and Media*, 15(1), 13–16. https://doi.org/10.1080/17482798.2020.1858435

Navarro, J. L., & Tudge, J. R. (2022). Technologizing Bronfenbrenner: Neo-ecological theory. *Current Psychology*. https://doi.org/10.1007/s12144-022-02738-3

The Nielsen Company (2017) Mobile kids , the parent, the child and the smartphone. https://www.nielsen.com/insights/2017/mobile-kids-the-parent-the-child-and-the-smartphone/

Odgers, C. (2018). Smartphones are bad for some teens, not all. *Nature*, 554(7693), 432–434. https://doi.org/10.1038/d41586-018-02109-8

Odgers, C. (2018, February 21). Smartphones are bad for some teens, not all. *Nature News*. Retrieved July 30, 2022, from https://www.nature.com/articles/d41586-018-02109-8

Perez Jr., J. (2021). Some kids never logged into remote school. Now what? *Politico*, April 29. https://www.politico.com/news/2021/04/29/remote-school-technology-479353

Petry, N. M., Rehbein, F., Ko, C.-H., & O'Brien, C. P. (2015). Internet gaming disorder in the DSM-5. *Current Psychiatry Reports*, 17(9). https://doi.org/10.1007/s11920-015-0610-0

Pew Research Center. (2021, April 7). Social Media Fact sheet. Pew Research Center: Internet, Science & Tech. Retrieved July 30, 2022, from https://www.pewresearch.org/internet/fact-sheet/social-media/

Piaget, J. (1976). Piaget's theory. Piaget and His School, 11–23. https://doi.org/10.1007/978-3-642-46323-5_2

Prescott, A. T., Sargent, J. D., & Hull, J. G. (2018). Metaanalysis of the relationship between violent videogame play and physical aggression over time. Proceedings of the National Academy of Sciences, 115(40), 9882–9888. https://doi.org/10.1073/pnas.1611617114

Resta, P. E. (2020). Moving Toward Digital Equity in the Technopolis. In STEM in the Technopolis: The Power of STEM Education in Regional Technology Policy (pp. 79-89). Springer, Cham.

Resta, P., Laferrière, T., McLaughlin, R., and Kouraogo, A. (2018). Issues and challenges related to digital equity: An overview. In J. Voogt et al. (eds.), Second Handbook of Information Technology in Primary and Secondary Education (pp.987-1004). Springer International Handbooks of Education.

Rideout, V., Fox, S., Peebles, A., & Robb, M. B. (2021). Coping with COVID-19: How young people use digital media to manage their mental health. San Francisco, CA: Common Sense and Hopelab. https://www.commonsensemedia.org/sites/default/files/research/report/2021-coping-with-covid19-full-report.pdf

Samual, A. (2017, August 8). Yes, smartphones are destroying a generation, but not of kids. *The Digital Voyage*. Retrieved July 30, 2022, from https://daily.jstor.org/yes-smartphones-are-destroying-a-generation-but-not-of-kids/

Schaeffer, K. (2021, October 7). 7 facts about Americans and Instagram. Pew Research Center. Retrieved July 30, 2022, from https://www.pewresearch.org/fact-tank/2021/10/07/7-facts-about-americans-and-instagram/

Shin, J. Y., Rheu, M., Huh-Yoo, J., & Peng, W. (2021). Designing technologies to support parent-child relationships: A review of current findings and suggestions for Future Directions. Proceedings of the ACM on Human-Computer Interaction, 5(CSCW2), 1–31. https://doi.org/10.1145/3479585

Smahel, D., Machackova, H., Mascheroni, G., Dedkova, L., Staksrud, E., Ólafsson, K., Livingstone, S., and Hasebrink, U. (2020). EU Kids Online 2020: Survey results from 19 countries. EU Kids Online. https://doi.org/10.21953/lse.47fdeqj01ofo

Smith, T. J., Mital, P. K., & Dekker, T. M. (2021). The debate on screen time: An empirical case study in infant-directed video. Taking Development Seriously: A Festschrift for Annette Karmiloff-Smith, 258–279. https://doi.org/10.4324/9780429445590-18-18

State of Kids' Privacy Report 2021. Common Sense Media. (2021, November 16). Retrieved July 30, 2022, from https://www.commonsensemedia.org/research/state-of-kids-privacy-report-2021

Strasburger, V. C., Zimmerman, H., Temple, J. R., & Madigan, S. (2019). Teenagers, sexting, and the law. *Pediatrics*, 143(5).

Swanson, J. A., & Walker, E. (2015). Academic versus non-academic emerging adult college student technology use. *Technology, Knowledge and Learning*, 20(2), 147-158.

Tudge, J. R. H. (2008). The everyday lives of young children: Culture, class, and child rearing in diverse societies. Cambridge University Press.

Undheim, M. (2022) Children and teachers engaging together with digital technology in early childhood education and care institutions: a literature review, *European Early Childhood Education Research Journal*, 30:3, 472-489, DOI: 10.1080/1350293X.2021.1971730

UNICEF. (2017). Children in a Digital World. United Nations Children's Fund.

US Federal Communications Commission (2021). Emergency Broadband Benefit program. https://www.fcc.gov/consumer-faq-emergency-broadband-benefit

Uzuegbunam, C. (2019, December 16). A child-centred study of teens' Digital Lifeworlds from a Nigerian perspective. Parenting for a Digital Future. Retrieved July 30, 2022, from https://blogs.lse.ac.uk/parenting4digitalfuture/2019/10/16/a-child-centred-study-of-teens-digital-lifeworlds-from-a-nigerian-perspective/

Vaterlaus, J. M., Beckert, T. E., & Schmitt-Wilson, S. (2019). Parent–child time together: The role of interactive technology with adolescent and Young Adult Children. *Journal of Family Issues*, 40(15), 2179–2202. https://doi.org/10.1177/0192513×19856644

Vaterlaus, J. M., Barnett, K., Roche, C., & Young, J. A. (2016). "Snapchat is more personal": An exploratory study on Snapchat behaviors and young adult interpersonal relationships. *Computers in Human Behavior*, 62, 594-601. https://doi.org/10.1016/j.chb.2016.04.029

Vogels, E., Gelles-Watnik, R. & Massarat, N. (2022). Teens, social media and technology 2022. Pew Research. https://www.pewresearch.org/internet/2022/08/10/teens-social-media-and-technology-2022/

Wartella, E., Rideout, V., Lauricella, A. R., and Connell, S. (2013). Parenting in the age of digital technology. Report for the center on media and Human development school of communication Northwestern University.

WHO (World Health Organization) (2019). Guidelines on physical activity, sedentary behavior and sleep for children under 5 years of age: web annex: evidence profiles (No. WHO/NMH/PND/19.2). World Health Organization.

Zhang, D., and Livingstone, S. (2019). Inequalities in how parents support their children's development with digital technologies. Parenting for a digital future. London School of Economics.

Zhu, C., Huang, S., Evans, R., & Zhang, W. (2021). Cyberbullying among adolescents and children: a comprehensive review of the global situation, risk factors, and preventive measures. Frontiers in public health, 9, 634909. https://www.frontiersin.org/articles/10.3389/fpubh.2021.634909/full

5.3 LEARNING ACTIVITIES

Developmental observations

This chapter highlights four domains of human development across four stages of childhood. To observe children's technology use with an eye to developmental impact, having a shorthand table can help. Many summaries of human development in children exist online. You can also create one using this table. Go to the Google doc and create a copy:

Developmental expectations by age group

	Physical	Cognitive/Learning	Social/Psychological	Initial interests in technology use at this age
Birth-5 years				
6-12 years				
13-18 years				
19-28 years				

It can be helpful to use an observation guide to compare and contrast technology use and possible impacts across age groups. A guide (such as the one below) enables you to observe use, within the context of the child. Doing this will help identify some of the traditional factors that motivate children's use (e.g., using it with peers, using it in school). Go to the Google doc and create a copy:

Technology Use Effects Age Group Comparison

	Young Children (B-5)	Children (5-12)	Teens (13-18)	Young Adults (18-29)
Developmental Tasks			8	
Technology Use Observations				
Potential Benefits/Concerns				
Recommendations			-	

Readiness to possess a smartphone

Debate the question: **Children should not be allowed to possess* a smartphone below the age of 12.**

**possess= have complete independent use of, beyond the cost of purchase. Possession may or may not involve covering or contributing to the cost of maintenance (e.g., data plans).*

Identifying the pros and cons of this prompt should create a sense of the developmental and practical and social reasons children "possess" phones. A key is to understand children's readiness and ability to handle what they may be exposed to through 24/7 access to the internet, social media, and apps. They also need to be responsible for maintaining and keeping safe a piece of technology.

Some resources (see chapter text for more references; also the Additional Resources and Materials for Chapter 5):

- Have smartphones destroyed a generation? (Atlantic Monthly, Sept 2017).

- What's the right age for a child to get a smartphone? (New York Times, 2016)
- What age should a kid get their first phone? (Washington Post, October 2022)

Smartphones in the classroom: Policy discovery

Begin by reading this news item: https://www.edsurge.com/news/2022-06-06-the-case-for-making-classrooms-phone-free?mc_key=00Qi000001X2OYEEA3

Scenario: You teach English at an urban public high school of about 2,000 students. Of the five classes you teach each day, each has an average of 28 students. Two classes are for junior and senior IB/AP students; two classes are for sophomores (a very mixed class), and one for freshman (first-year students, most of whom are from immigrant families where English is not spoken at home).

You attend a Parent-Student-Teacher Association (PTSA) meeting and hear a demand from some teachers for students NOT to have phones available during classes. Currently, the policy by the school and the school district is vague; it primarily encourages "responsible use" and "individual preference by instructors." Many of the parents agree with the ban, as do a few of the students present. But not all of the students agree. And several teachers of upper-grade students advocate that phones be available for learning purposes. The principal has asked you to lead a work group to identify policies on phones from high schools. The aim will be to present policy options to the PTSA and the student body for creation of a policy, which will then be brought to the school district for adoption.

1. Identify examples of policy that can be presented to the school.
2. Given parents' concerns for their children's exposure to the internet and social media, and the potential value of them having a smartphone, provide a list of recommendations for families in determining children's safe and effective use of a smartphone. Consult with parents if you like. Write the list as a handout that might be shared by parenting educators.

Technology use by young children in early care and education

Early childhood teachers and child care providers often grapple with whether to teach young children using technology, and with the degree to which iPads, media, YouTube channels, and apps should figure into the day of learning. This list of reflection questions is great for honing in on the intentions behind teaching young children and the use of technology:

Guidelines for Incorporating Technology: Self-Reflection https://www.virtuallabschool.org/fcc/creative-expression/lesson-2/act/25181

Book review

Amazon and other booksellers are full of books about children using technology. Here are a few:

- The wired child: Reclaiming childhood in a digital age. (2015). Richard Freed.
- Glow kids: How screen addiction is hijacking our kids — and how to break the trance. Nicholas Kardaras.
- Screenwise (2016). Devorah Heitner.
- The big disconnect: Protecting childhood and family relationships in the digital age (2013). Catherine Steinger-Adair.
- How to stay safe on social media: Social media do's and don'ts: What kids and parents should know. (2021). Effie Manolas.

Choose one of these titles and read it carefully. If you were to write a review of the book for a) family professionals and b) parents, what would write? Strive for a critical eye; remember that

reviews often lead readers to consume or ignore a source, and that few publications are perfect just as they are. What should readers attend to? What would readers find most meaningful?

Recommendations for healthy technology use by emerging adults

The aims of young adult development are characterized by

- healthy body and mind
- exploration and identity
- Individuation
- family connectedness and separateness
- feeling stable, less ambivalent
- taking on “full responsibilities of adulthood”

Considering these aims, and your own experiences of and goals for your growing sense of yourself as an adult, what are guidelines you’d recommend for healthy technology use for your age group? Join with a group of peers and create a list of recommendations. Engage in a dialogue about the challenges you face in your technology use and in taking on the “full responsibilities of adulthood” to prepare a realistic and constructive list.

5.4 BLOG PROMPTS

The American Academy of Pediatrics released a tool, called The Family Media Plan, to help families create a plan for their children's use of media. This tool can be a real help as families negotiate the amount of time children spend with technology and screens. Yet is it realistic to expect that families would be able to follow through on this plan? Why? Or why not?

This textbook provides an overview of developmental differences, technology uses, and potential concerns and benefits across age groups. Yet research is growing on specific aspects of technology/device/application and child age and impact. Identify an area that you are most interested in, and present what the research and policy literature says about it. Even if you find just a few studies or reports from reputable sources, try your hand at summarizing recent findings. For example, Fortnite is popular with children, prompting questions about gaming effects on children's socialization. Your post would examine research on children in middle childhood (6–12 years) who play interactive games, and what impacts have been found. What are the recommendations for parents and practitioners? Have industry standards been recommended or other policy action? Provide your perspective — what draws your interest to this (for instance, are you a gamer? do you work with school-age children?) and what you take from the research.

Particularly sensitive issues like depression and suicide, cyberbullying, child privacy, sex trafficking, children's exposure to influencers on guns, and videogame addiction can be sensationalized in the press and in conversation among parents and educators. Select a hot-button issue and argue for a rational understanding of technology's role. Doing so brings up the pros and cons of the internet, and of users, influencers, and our wider and global society's involvement.

5.5 ADDITIONAL RESOURCES & READINGS

Child Development

- Centers for Disease Control and Prevention. (2021, September 23). Child development basics. Centers for Disease Control and Prevention. Retrieved July 31, 2022, from https://www.cdc.gov/ncbddd/childdevelopment/facts.html
- Lavarra, J. Lifespan Development (2020). Open Textbook for Psych240 Maricopa Community College. https://open.maricopa.edu/devpsych/
- United Nations Children's Fund (UNICEF) (2021). What makes me, me? Core capacities for living and learning. https://www.unicef-irc.org/publications/pdf/What-Makes-Me_Core-Capacities-for-Living-and-Learning.pdf

Virtual Labs:

- Infants & Toddlers . Virtual Lab School. (n.d.). Retrieved July 31, 2022, from https://www.virtuallabschool.org/infant-toddler
- Preschool. Virtual Lab School. (n.d.). Retrieved July 31, 2022, from https://www.virtuallabschool.org/preschool
- School-Age. Virtual Lab School. (n.d.). Retrieved July 31, 2022, from https://www.virtuallabschool.org/school-age
- Focused Topics: Sexual Development & Behavior in Children and Youth: Understanding Normative Sexual Development & Behavior. Virtual Lab School. (n.d.). Retrieved July 31, 2022, from https://www.virtuallabschool.org/focused-topics/sexual-development-and-behavior-in-children-and-youth/lesson-2

Technology Influences on Child Development

Influences across age groups

- Rizzi, J. (2019, September 16). Kids are not hurt by screen time. *Scientific American.* Retrieved July 31, 2022, from https://www.scientificamerican.com/podcast/episode/kids-are-not-hurt-by-screen-time/

- Digital Media and Developing Mind — proceedings of the National Academy of Sciences of the United States of America. Children and Screens: Institute of Digital Media and Child Development. (2021, November 9). Retrieved July 31, 2022, from https://www.childrenandscreens.com/digital-media-and-developing-mind-proceedings-of-the-national-academy-of-sciences-of-the-united-states-of-america/
- Joan Ganz Cooney Center: https://joanganzcooneycenter.org/publications/ [association promoting children's media research for more than 50 years]
    - Sample report: Bulger, M., Madden, M., Sobel, K. and Davison, P. (2021) The Missing Middle. Reimagining a Future for Tweens, Teens, and Public Media https://joanganzcooneycenter.org/publication/missing-middle/
- Meyer, D. E. (2018). From savannas to blue-phase LCD screens: Prospects and perils for child development in the post-modern digital information age. *Proceedings of the National Academy of Sciences, 115*(40), 9845–9850. https://doi.org/10.1073/pnas.1812850115
- Smith, A., Oztan, A., & Levey, R. (n.d.). Parenting bytes: Raising kids in the digital age. PARENTING BYTES. Retrieved July 31, 2022, from https://parentingbytes.com/ . Sample and relevant episodes include the following:
    - Episode 166: Growing up with Alexa: how is this technology affecting our kids?
    - Episode 161: Should You Pay Attention To Video Game Ratings?
    - Episode 240: Why audiobooks are really great for kids (and adults!) right now
- Stoilova, Mariya; Livingstone, Sonia; Khazbak, Rana (2021). Investigating Risks and Opportunities for Children in a Digital World: A rapid review of the evidence on children's internet use and outcomes, *Innocenti Discussion Papers*, no. 2020-03, UNICEF Office of Research – Innocenti, Florence. https://www.unicef-irc.org/publications/1183-investigating-risks-and-opportunities-for-children-in-a-digital-world.html
- 60 things every child should know about the internet. https://www.teachthought.com/technology/every-child-should-know/

Reports from Professional Associations

Zero to Three:

- Newman, N. F. (n.d.). Early childhood, media use, and development: Human touch first and foremost. https://www.zerotothree.org/resources/3352-early-childhood-media-use-and-development-human-touch-first-and-foremost
- Barr, R., McClure, E., & Parlakian, R. (2019, November 19). Maximizing the potential for learning from screen experiences in early childhood: What the research says. https://www.zerotothree.org/resources/3005-maximizing-the-potential-for-learning-from-screen-experiences-in-early-childhood-

what-the-research-says

- Full Report: Screen sense: What the research says about the impact of media on children aged 0-3 years old. (2018, October 25). https://www.zerotothree.org/resources/2536-screen-sense-what-the-research-says-about-the-impact-of-media-on-children-aged-0-3-years-old

National Association for the Education of Young Children (NAEYC)

- Technology and young children: Infants and toddlers. NAEYC. (2012). Retrieved July 31, 2022, from https://www.naeyc.org/resources/topics/technology-and-media/infants-and-toddlers
- Technology and young children: Preschoolers and Kindergartners. NAEYC. (2012). Retrieved July 31, 2022, from https://www.naeyc.org/resources/topics/technology-and-media/preschoolers-and-kindergartners

Commonsense Media

The Common Sense Census: Media use by kids age zero to eight, 2020. Common Sense Media. (2020, November 17). Retrieved July 31, 2022, from https://www.commonsensemedia.org/research/the-common-sense-census-media-use-by-kids-age-zero-to-eight-2020

Digital Futures Commission

Livingstone, S. & Pothong, K. (2021). Playful by Design: A Vision of Free Play in a Digital World. Digital Futures Commission (London: 5Rights Foundation). https://digitalfuturescommission.org.uk/wp-content/uploads/2021/11/A-Vision-of-Free-Play-in-a-Digital-World.pdf

Erikson Technology and Early Childhood

Herdzina , J., & Lauricella, A. R. (2020). Framework, Child Development Guidelines, and Tips for Implementation. Media Literacy in Early Childhood Report. Retrieved July 31, 2022, from https://www.erikson.edu/wp-content/uploads/2021/06/TEC-MediaLiteracy-Report.pdf

Virtual Lab

Family Child Care: Safe Environments: Technology and Internet Safety. Virtual Lab School. (n.d.). Retrieved July 31, 2022, from https://www.virtuallabschool.org/fcc/safe-environments/lesson-11

Paper

James M. Ernest, Cora Causey, Allison B. Newton, Kimberly Sharkins, Jennifer Summerlin & Najla Albaiz (2014) Extending the Global Dialogue About Media, Technology, Screen Time, and Young Children, Childhood Education, 90:3, 182-191, http://dx.doi.org/10.1080/00094056.2014.910046

Briefing

New York Academy of Sciences (2020): The Effects of Screen Time on the Developing Brain .https://www.nyas.org/ebriefings/2020/the-effects-of-screen-time-on-the-developing-brain/?tab=covid-19:%20screen%20time%20and%20the%20developing%20brain

Middle Childhood and Adolescence

- See Connected Learning Alliance (https://clalliance.org/) for ongoing research and reports.
- Pre-teens: Entertainment & Technology. Raising Children Network. (n.d.). Retrieved July 31, 2022, from https://raisingchildren.net.au/pre-teens/entertainment-technology
- Technology and young children: School-age children. NAEYC. (n.d.). Retrieved July 31, 2022, from https://www.naeyc.org/resources/topics/technology-and-media/school-age-children
- Ito, M., Ogders, C. and Scheuller, S. (June 2020) Social Media and Youth Well-being. What we know and where we could go. https://clalliance.org/publications/social-media-and-youth-wellbeing-what-we-know-and-where-we-could-go/.
- Center for Scholars and Storytellers: CSS Teens and Screens 2022. https://www.scholarsandstorytellers.com/css-teens-and-screens-2022
- The Digital Divide. The Common Sense Census: Media Use by Tweens and Teens, 2021. (2021). Retrieved August 1, 2022, from https://www.commonsensemedia.org/sites/default/files/research/report/2021-8-18-census-fact-sheet-digital-divide_0.pdf
- Black Children's Media Use. The Common Sense Census: Media Use by Tweens and Teens. (2021). Retrieved from https://www.commonsensemedia.org/sites/default/files/research/report/2021-8-18-census-fact-sheet-black-childrens-media-use_0.pdf
- Hispanic/Latino Children's Media Use. The Common Sense Census: Media Use by Tweens and Teens. (2021). Retrieved from https://www.commonsensemedia.org/sites/default/files/research/report/2021-8-18-census-fact-sheet-hispanic_latino-childrens-media-use_0.pdf
- Gaming. The Common Sense Census: Media Use by Tweens and Teens, 2021. (2021). Retrieved from https://www.commonsensemedia.org/sites/default/files/research/report/2021-8-18-census-fact-sheet-gaming_0.pdf
- Raising Good Gamers. 2020. Katie Salen for Connected Learning Lab. https://clalliance.org/wp-

content/uploads/2020/09/Raising-Good-Gamers-Envisioning-an-Agenda-for-Diversity-Inclusion-and-Fair-Play.pdf

Schools/Learning and Technology

- As many parents fret over remote learning some find their kids are thriving. KQED Mindshift. https://www.kqed.org/mindshift/57480/as-many-parents-fret-over-remote-learning-some-find-their-kids-are-thriving
- Digital Futures Commission (2022). Education Data Reality. The challenges for schools in managing childrens education data. https://digitalfuturescommission.org.uk/wp-content/uploads/2022/06/Education-data-reality-report.pdf
- LeBeaux, C. (October, 2022). Screen Time, Minecraft, and Roblox: Help for Guiding Kids to Have Fun Online, Connectedcamps.com: https://blog.connectedcamps.com/screen-time-minecraft-and-roblox-help-for-guiding-kids-to-have-fun-online/

Emerging Adulthood

- Arnett, J. J. (2015, April 28). Why does it take so long to grow up today? YouTube. Retrieved July 31, 2022, from https://youtu.be/fv8KpQY0m6o
- Vedantam, S., Schmidt, J., Kwerel, L., Boyle, T., Cohen, R., & Arablouei, R. (2019, September 9). Online behavior, real-life consequences: The unfolding of a social media scandal. Hidden Brain. Retrieved July 31, 2022, from https://www.npr.org/2019/09/06/758281834/you-cant-hit-unsend-how-a-social-media-scandal-unfolded-at-harvard
- Developmental resources on emerging adulthood (from the Society for the Study of Emerging Adulthood) http://www.ssea.org/resources/related_links.htm

Millennials and GenZ:

- Parker, K., & Igielnik, R. (2022, April 1). On the cusp of adulthood and facing an uncertain future: What we know about gen Z so far. Pew Research Center's Social & Demographic Trends Project. Retrieved July 31, 2022, from https://www.pewsocialtrends.org/essay/on-the-cusp-of-adulthood-and-facing-an-uncertain-future-what-we-know-about-gen-z-so-far/
- Bialik, K., & Fry, R. (2022, April 1). Millennial life: How young adulthood Today compares with prior generations. Pew Research Center's Social & Demographic Trends Project. Retrieved July 31, 2022, from http://www.pewsocialtrends.org/essay/millennial-life-how-young-adulthood-today-compares-with-prior-generations/

Special Topics

Privacy & Safety

- Kelly, G., Graham, J., Bronfman, J., & Garton, S. (2021). The State of Kids' Privacy. Common Sense. Retrieved from https://www.commonsensemedia.org/sites/default/files/research/report/common-sense-2021-state-of-kids-privacy_0.pdf
- Five Rights Foundation. https://5rightsfoundation.com/
  - Marking Child Online Safety A Reality: https://5rightsfoundation.com/in-action/making-child-online-safety-a-reality-global-toolkit-launched.html
- Livingstone, S., Carr, J. and Byrne, J. (2016). One inThree: Internet Governance and Children's Rights. Innocenti Discussion Paper No.2016-01, UNICEF Office of Research, Florence. https://www.unicef-irc.org/publications/pdf/idp_2016_01.pdf

Cyberbullying

- Kaspersky. (2016, June 1). Cyber-bullying facts – top 10 forms of cyber bullying. YouTube. Retrieved July 31, 2022, from https://youtu.be/0Xo8N9qlJtk
- Reports from Commonsense Media:
  - Is there a connection between cyberbullying and suicide? Common Sense Media. (2020, June 2). Retrieved July 31, 2022, from https://www.commonsensemedia.org/articles/is-there-a-connection-between-cyberbullying-and-suicide
  - When should parents intervene in a cyberbullying situation? Common Sense Media. (2020, June 2). Retrieved July 31, 2022, from https://www.commonsensemedia.org/articles/when-should-parents-intervene-in-a-cyberbullying-situation
  - Parenting, media, and everything in between. Common Sense Media. (n.d.). Retrieved July 31, 2022, from https://www.commonsensemedia.org/cyberbullying
- Gottschalk, F. (2022), "Cyberbullying: An overview of research and policy in OECD countries", *OECD Education Working Papers*, No. 270, OECD Publishing, Paris, https://doi.org/10.1787/f60b492b-en.

Sexting

- Strasburger, V. C., Zimmerman, H., Temple, J. R., & Madigan, S. (2019). Teenagers, sexting, and the law. *Pediatrics, 143*(5). https://publications.aap.org/pediatrics/article/143/5/e20183183/37112/Teenagers-Sexting-and-the-Law

General Recommendations for Parents and Practitioners

- D4CR. Designing for Childrens Rights Association. https://designingforchildrensrights.org/ [a global non-profit association, working in collaboration with UNICEF to create awareness about the importance of keeping children's rights in mind when building products and services]
- Designing for Childrens Rights Guide: https://childrensdesignguide.org/
- EDTECH TOOLS. Common Sense Education. (n.d.). Retrieved July 31, 2022, from https://www.commonsense.org/education/search?contentType=reviews&j=8996986&sfmc_sub=171545187&l=2048712_HTML&u=198976204&mid=6409703&jb=1014&utm_source=edu_nl_long_form_2022.7.19&utm_medium=email
- Family media plan. American Academy of Pediatrics. (n.d.). Retrieved July 31, 2022, from https://www.healthychildren.org/English/media/Pages/default.aspx
- Elgersma, C. (2021, March 15). 11 social media red flags parents should know about. Common Sense Media. Retrieved July 31, 2022, from https://www.commonsensemedia.org/articles/11-social-media-red-flags-parents-should-know-about
- Higgin, T. (Ed.). (2020, January 10). A best-of-the-best collection of resources for teaching and learning about media literacy. Media Literacy Resources for Classrooms. Retrieved July 31, 2022, from https://www.commonsense.org/education/articles/media-literacy-resources-for-classrooms
- Technology in early childhood center. Erikson Institute. (2022, June 16). Retrieved July 31, 2022, from https://www.erikson.edu/academics/professional-development/district-infancy-programs/tec-center/

CHAPTER 6: TECHNOLOGY USE BY PARENTS

6.1 TECHNOLOGY USE BY PARENTS

Be strong, be fearless, be beautiful. And believe that anything is possible when you have the right people there to support you.

– Misty Copeland

Chapter Insights

- Although research on adult technology use exists, an interest in parent use requires specific study.
- This chapter identifies three main ways that parents use technology to serve their parenting roles: using technology to parent, using technology with children, using technology to support oneself in the parenting role.
- Parents vary in their technology use. These differences are important to keep in mind when exploring parents' impact on children's development in terms of technology use and oversight.
- Five domains of parenting practice integrate ways in which technology is used by parents, and can be used to measure successful parenting.
- Generational differences play out in a parents' use of technology.
- Parents are not necessarily "equal" when it comes to using technology on their own, and in fulfilling their parenting role.
- "Sharenting" can be useful to reinforce the childrearing experience, yet can also bridge ethical challenges to children's privacy.
- After reading this chapter, identify what you feel inspired by, the questions that remain for you, and the steps you can take for your own technology use to be more intentional.

Introduction

"Whistler's Mommy-Blogger" by Mike Licht, NotionsCapital.com is licensed under CC BY 2.0.

Every day, and for many all day, adults use ICT in many different ways. But consider what they use in their roles as parents, how technology relates to or facilitates those roles, who it's used with, and what parenting goal results. How do your parents or other caregivers you know use technology to fulfill their roles in parenting?

In the previous chapter we examined technology use by children from birth through young adulthood, exploring potential impacts on their development and well-being. We discussed the benefits and potential consequences of technology use across ages and developmental domains, all of which are the focus of ongoing research. Embedded and implied in the discussion were parents' roles; their concerns around the amount of time children are on screen, their responsibilities for healthy engagement, and family decision making about children's responsible smartphone use. Lim (2016) calls this the practice of "transcendent parenting," which goes beyond traditional, physical concepts of parenting to incorporate virtual and online parenting.

Recommendations from the American Academy of Pediatric about technology use by young children, older children, and teens (Pathway Pediatrics, 2021) are written almost exclusively to parents — underscoring how our society confers on parents childrearing responsibilities that include technology management skills and the knowledge of technology's impacts.

Parents integrate technology into their parenting — using phone calls, texts, social media interactions, and other experiences as ways to convey guidance and nurturance to children. Consider how your parent(s) communicate with you. What parenting messages or roles are conveyed through these methods? Parents also use technology in ways that support them as parents and only indirectly impact children.

Calling CC2.0 by Ajay_Suresh

CC BY Ben Yourdon

"Parent / Mum Blogging" by Jonathan Rolande is licensed under CC BY 2.0.

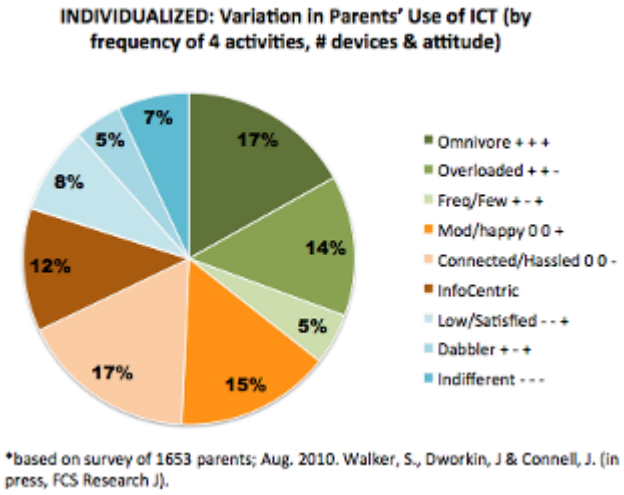
Chapter 7 will explore relationship dynamics between parents and children when parents assert their parenting role around children's safe and healthy technology use, and children assert agency in use. This includes parents' mediating, moderating, and monitoring children's use (parenting about technology), and impacts on the parent-child relationships. Chapter 7 will also include the ways in which parents use technology with their children to convey words and actions. In this chapter, the focus is on parents alone — how parents themselves use information and communications technology, and the value and purpose it serves in parenting and to the parent him or herself.

Here are a couple things to keep in mind as we go through this chapter:

- **Data reporting "adult" technology use is not sufficient to capture the role of parenting by adults.** It is important to distinguish research focused on parents from that focused on the childrearing role fulfilled by parents. As an example, Duggan et al. (2015) focused on social media and internet use among parents and non-parents, though the study included a representative sample of U.S. adults. They showed that parents are more likely to use the internet than non-parenting adults and that they use types of social media differently (participating in most social media applications, except for Instagram, in greater numbers). Some research on adults may report the data as coming from parents, under the supposition that those who are parents are adults, yet discrimination is necessary for accuracy.

Fortunately, as parenting researchers became more comfortable doing studies that involved technology and internet use, the availability of studies collecting and reporting results from parents is more available.

- **Parents are not monolithic.** They vary by age, maturity, gender, family configuration, number of children, culture, race, global location, and much more. In Chapter 3 we discussed how these variables can influence differences in family technology use. Like other technology users, parents vary widely in their access, use, function, and attitude about devices. More than a decade ago, the author's research on parents and technology use identified how caregivers vary by their attitudes toward technology mixed with device ownership and activity (Walker et al., 2015). Over 1,600 parents of children under the age of 18 were surveyed online. We asked questions with regard to the frequency of their doing four different activities with technology such as communication and information searching, the number of devices owned in the household, and their attitudes regarding technology. As you can see in the chart below, we identified nine different groups. "Omnivores," or those in families with many devices doing all kinds of activities, held a very positive attitude about technology. The majority were in the moderate category, where they may have used technology for very specific purposes, had an average number of devices ,and may have had very positive or not-so-positive attitudes with regard to technology.



A smaller group (likely even smaller now) were indifferent/had a few devices/had fairly negative attitudes about technology and used them for few activities. Certainly, over time and with new devices and applications and ICT functionality, even more differences among parents can be seen. The essential issue is that we don't hold a belief that parents use technology in the same ways.

Many caregivers are employed, and the conditions of their workplaces and jobs vary widely. These contexts affect technology use, access, and comfort in ways that affect parents as employees and their parenting and presence as parents. Being available for calls or meetings in the home space and during nontraditional hours can distract parents from being attentive to children. In other cases, parents who appreciate the flexibility

provided by mobile technology and home internet may juggle responsibilities and be more available to children.

Jointly, these demographic characteristics influence parents' needs on what to know about technology and what they may do with it, and they play a role in their comfort with ICT. Too often, discussions generalize "parents' social media use" or "parents" monitoring of their children's use, when in fact wide variation exists among parents. Pew's study of parent social media use, for example, shows vast differences between mothers and fathers in types of social media, purposes for use, and frequency of behavior (Duggan et al., 2015). Yet a global statement referring to "parents" lacks discrimination by gendered role.

Before diving into specifics of parents' technology use, we begin with an overview of the parenting role and influences on it. This framework provides a foundation for understanding technology use as expression of the parenting role.

About Parenting

Parents represent one of the largest and most significantly important population groups in any society. In essence, they are directly (and legally) responsible for raising the next generation of adults, and the quality of their efforts is related to developmental and educational outcomes. Economically, their earning power to support their children, their tax contributions, and their consumer behavior contribute greatly to society's wealth and resources. Yet individuals receive no formal training for parenthood, and with economic challenges and shifting family structures leaving many parents alone in childrearing, and with a lack of public services in the U.S. for all but the neediest families, parenting is highly challenging. In fact, most parents say that parenting today is far tougher than when they were growing up (Auxier et al., 2020).

To understand the ways in which technology aligns with the parenting role is to first understand what "parenting" is, and then to identify the multiple influences on parenting. These can help us imagine the various ways that technology helps to fulfill the parenting role and factors that might differentiate its impacts.

If you were to write a job description for what parents do, yours and others,' what might you say? Beyond the most obvious actions, consider

At its most basic, parenting can be conceptualized hierarchically to mean keeping children protected, healthy, and surviving (most basic function); nurturing, and guiding their development (where most of our traditional notions of parenting lie); and, when needed advocating on their behalf. [1]

the range of roles and responsibilities parents and other caregivers take on across a child's life.

For most parents, the first level — providing basic needs and protecting from harm — is a given, yet for many families it's truly an economic struggle. Our social welfare system is in place to assist families with meeting basic needs, especially around housing, health care, nutrition and finding employment. The second level, guiding development, is a process that doesn't stop when children are 18 or out of the house. Throughout a child's life, they will seek and be guided by their parents. Actions that parents take in guiding children, as described in a booklet by the U.S. Department of Health and Human Services, include responding in an appropriate manner, monitoring to preventing risky behavior or problems before they arise, mentoring to support and encourage desired behaviors, and modeling their own behavior to provide a consistent positive example for the child. The third level, advocacy, is expressed in big and small ways, also throughout a child's life. It may be individualized, such as when a parent meets with a teacher on behalf of one child, or globalized, as when a parent advocates for an issue that affects many children, such as lobbying for children's technology privacy and safety. Think about your own life, and how your parent or parents have fulfilled these roles for you.

1. This is just one of several parenting pyramids characterizing parenting roles and processes. See, for example, the Parenting Pyramid from the Arbinger Institute, which embeds guidance within the relationship: https://content.byui.edu/file/91e7c911-20c5-4b9f-b8fc-9e4b1b37b6fc/1/Parenting_Pyramid_article.pdf

Parenting is often thought of in a directional way, with parenting action "causing" child outcomes (For example, the news reports of teenager committing crime and someone remarks about 'bad' parenting.). Perhaps this is because of the authority conferred on the responsibility of parenting, across the child's early to later adolescent years and beyond, and the enactment of these responsibilities to help children flourish. Dynamics of family roles, certain experiences in families, and the way parents are often represented in the media can suggest that parenting actions directly impact the child. [2]

"Siblings" by Andrew Nourse is licensed under CC BY 2.0.

Impacts on child development are, however, mulitfactorial. And parenting is a bi-directional and a transactional process. A parent attends to the needs of the individual child and tailors their responses to that child's individuality. They reflect on their resources, gain understanding from the interaction and observation with the child and in the context, and learn. This is attunement. Once again, consider your brothers and sisters if you have them: did your parents parent them the same way as they parented you? Probably not. Your brothers and sisters are different than you, they are different ages, possibly different genders, and have different personalities and temperaments, and your parent was a different age when each sibling arrived. Your oldest brother/sister may have been born when your parents were in their twenties, and by the time you came along your parents were ten years older. You can imagine how much experience they had gained in those ten years. So as parents understand and react and respond and guide their children, they too grow and develop through their experiences as human beings, and they attune and transactionally gear their childrearing based on information they glean through interaction with the child.

Although there are many frameworks of parenting, ones that incorporate individual differences of parents and myriad contextual factors as influential on parenting and parent-child relationships are useful to apply cross-culturally and when viewing parenting in the novel area of technology. Most social systems perspectives of parenting emanate from a bioecological paradigm (Bronfenbrenner, 1995), discussed in Chapters 2 and 5.

2. How ironic then that it wasn't too long ago (1998) that a book in the popular press by an independent researcher stirred up conversation whether parents even mattered.

frameworks of parenting that incorporate individual differences of parents and myriad contextual factors as influential on parenting and parent-child relationships are useful to apply cross-culturally and when viewing parenting in the novel area of technology

This perspective recognizes individual behavior and growth as influenced by interacting systems, sensitive to change and to time, in which the individual is variably affected, largely related to qualities unique to the individual and to proximal processes or "enduring forms of interaction in the immediate environment" (p. 620). A social constructivist view of development (Vygotsky, 1978) supports the role of the context in scaffolding parent development to move to a higher level of functioning, provided that they are in their "zone of proximal development" (within their developmental reach based on existing capacities). Adequate contextual supports can help adults acquire a greater repertoire of cognitive, behavioral, and relational skills, and reinforce identification in the role. The social context can, however, interfere with growth, or may assert needs that are beyond the individual's capacity (e.g., living in poverty). A competency model proposed by Johnson et al. (2014).[3] adds to the rudimentary model above by adding to functional competences (e.g., provision of basic needs, behavioral guidance), with foundational competencies (e.g., psychological health) and contexts (child age, development, parental social network).

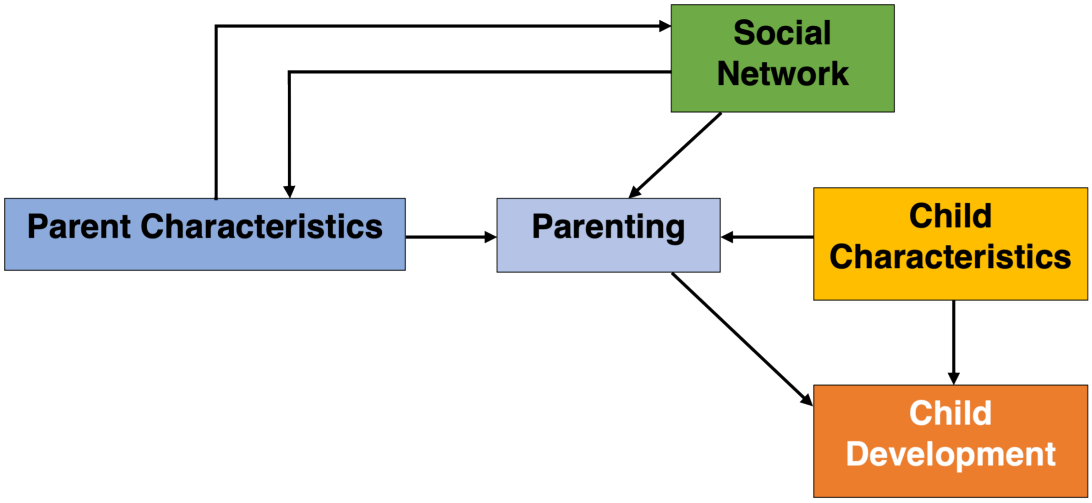
With consideration to the focus on technology, children's technology use and individual differences of the child can be seen as context factors, as can influences from school and peers and wider institutions on that use. These intersect with foundational elements of the parent's own psychological and cognitive abilities and attitudes to influence apparent parenting behaviors related to technology use (their own, the child's, and the family's). This model also reveals child use or parenting response not as a linear action, but as interactive and recursive in response to other elements. Parenting behavioral guidance will change with the child's age, and a parents' mental health may improve with feelings of self-efficacy as a result of interactions with their child around technology use.

Influences on Parenting

Belsky's (1984) model articulates determinants of parenting as including three primary spheres: the individual parent, his or her social system, and the child. Parenting is influenced by individual characteristics of the parent, including developmental history (e.g., how s/he was parented) and personal traits (e.g.,

3. A word on the word "competency:" it refers here to the skills applied to caregiving, rather than a qualitative assessment. There are volumes of research on this concept, and readers are encouraged to see how scholarship defines and measures "competent" parenting.

personality, mental health, maturational level of development). The child influences parenting and requires "fit" to the child's needs through factors including developmental stage, health, temperament, and gender. Interaction with the social context provides the parent with information, influences, norms and expectations, resources, emotional, and practical supports that may shape, reinforce, and possibly thwart parenting. For example, social support in the form of practical assistance from family helps alleviate everyday stress, resulting in more positive maternal mental health.



Determinants of parenting (a modified model adapted from Belsky, (1984).

Determinants work interactively to influence the practice, attitudes, and relational qualities of parenting, which have direct or indirect impacts on child outcomes. For example, a social cognitive perspective of parent development (Azar) holds that a parent's understanding of the relational role evolves through the development of cognitive capacities that are shaped through interaction with the environment.

As parenting is, in part, a social construction, and the environment provides opportunities that scaffold learning and develop knowledge and identity (Marienau & Segal, 2006) to deeper, more complex levels. As the parent matures and grows in understanding of self relative to others (the needs of the child), and is surrounded and influenced by expectations of the social context, their perceptions and responses will change. The table below describes the **"stages" of parenting** that align with childrearing across a child's development (Galinsky, 1987). These stages need more in-depth study to reflect other conditions of a parent's life, such as having multiple children, gaining stepchildren, and child loss. They have also not been adequately applied across cultural frameworks. Nevertheless, they indicate change within the parent as an adult as related to child development.

	Age of Child	Main Tasks and Goals
Stage 1: The Image-Making Stage	Planning for a child; pregnancy	Consider what it means to be a parent and plan for changes to accommodate a child.
Stage 2: The Nurturing Stage	Infancy	Develop an attachment relationship with child and adapt to the new baby.
Stage 3: The Authority Stage	Toddler and preschool	Create rules and figure out how to effectively guide children's behavior.
Stage 4: The Interpretive Stage	Middle childhood	Help children interpret their experiences with the social world beyond the family.
Stage 5: The Interdependent Stage	Adolescence	Renegotiate relationships with adolescent children to allow for shared power in decision-making.
Stage 6: The Departure Stage	Early adulthood	Evaluate successes and failures as parents.

The "stages"of parenting that align with childrearing across a child's development, from https://nobaproject.com/modules/the-developing-parent referring to Galinsky, E. (1987). The six stages of parenthood. Perseus Books.

Belsky's model also includes influences from the marital (partner/co-parent) or partner relationship and from work — both affecting the parents' ability to parent and the parents' own parenting behaviors. Chapter 9 will focus on work-family balance and technology and explore how the workplace can influence technological considerations in parenting.

A potential research question integrating these factors with relationship to technology might examine parents' monitoring of a child's use of social media. This parenting behavior might vary with parent age and understanding of technology (parent characteristics) and with the child's age (child characteristics). We might then measure the time spent on schoolwork as an outcome, with our hypothesis being that parents who are comfortable with technology and children who are normatively developing may interact more constructively with technology for homework, leading to the child spending more time on school work. We might also incorporate social media, hypothesizing that parents' discussion with friends about social media's effects might influence a mother's motivation to monitor her child's time and exposure online while the child is using technology for homework.

A third model that respects individual variation is **Super and Harkness' developmental niche (1986)**, conceptualizing child-rearing practices as the outgrowth of caregiver beliefs intersecting with setting demands and cultural perspectives. With regard to their technology use with and for their children's wellbeing,

parenting practices are motivated by (or in response to) a specific setting for which parents are preparing their children to live. As parents acknowledge shifts in the world compared to their own childhoods, and the ways in which successfully operating in life is now dependent on comfort and skill with a multifaceted range of devices, applications, and settings that call for technology integration, their actions will reflect the worlds they know and the worlds they anticipate for their children.

Readers will note that these models offer perspectives on parents and parenting in a gender-neutral way. Certainly, there are models specific to "mothering" and "fathering" and to others who perform roles in less traditional, heterosexual, cis-gendered ways (e.g., non-biological parents, homosexual caregivers, grandparents conferring the role of primary caregiver). These models focus heavily on social and cultural constructions of the role, influences that reinforce or disrupt role expectations, unique elements of the role as played out by the individual, and shifts in perspectives about the role over time. Readers are encouraged to identify parenting models that speak to populations of interest as they interpret the ways in which technology is used and how the societal impact of technology defines and constricts the expression of the role.

Parenting as Represented through Information and Communications Technology Use

Technology use to fulfill parenting functions and aims

An important analysis done with my colleague Jessica Rudi in 2014 asked whether parents use ICT in ways that facilitate discrete and recognized domains of parenting (Walker & Rudi, 2014). If so, are there apparent trends in the types of ICT activities that align with those parenting goals? Our sample contained 1422 parents whose oldest child was 18. The mean age of the mothers was 37, with a range of 19–70, and the mean age of their children was 7, with a range from birth through 18. Like much of the early

Parents use a variety of technologies and media to fulfill a range of parenting functions, from self-development, to knowing more about child development and parenting, to securing resources and social connections for the family.

survey research on parents and technology, this sample unfortunately was predominantly white and well-educated, and therefore we cannot generalize the results to all parents. However, this was early work to indicate the range of ways in which parents use technology that fulfill all domains of the parenting role. Recent work by Livingstone et al. (2018) revealed similar data on the range of ways parents use technology for parenting.

Information and communication activities included the frequency of doing an activity for parenting. Respondents were asked to indicate whether the action and use of technology was done in general as an adult or whether it was done for parenting. For example, when they responded that email and texting were used for personal communication, they would be asked the degree to which this was done for parenting. Frequency of actions were measured as weekly or more often, so a certain level of activity was required for the action to count. The five domains of parenting were taken from the Parent Education Core Curriculum Framework (PECCFI) by the Minnesota Association of Family and Early Education (mnafee.org), which assists licensed parenting educators in Minnesota with the creation of curriculum for parents. The five domains are:

- **Parent development:** promote parent confidence, secure the parents' philosophy of parenting, and explore perspectives related to parenting.
- **Parent-child relationship:** strengthen reciprocity, trust, and expressions of affection; ensure the child's health and safety.
- **Child development:** understand children's development and have reasonable expectations; promote all aspects of child development — physical, cognitive, social, and psychological.
- **Family development:** promote family time together, and manage family resources.
- **Culture and community:** build and maintain relationships with friends and professionals, seek support.

Parent Development	Parent-Child Relationship	Child Development	Family Development	Culture & C
Promote parent confidence, philosophy	Strengthen reciprocity, trust, express affection	Understand development; have reasonable expectations.	Promote family time together.	Build & maintain r friends, professiona
Explore perspectives	Monitor child's safety, peers	Promote all aspects of child's development.	Manage family resources	Seek support.
Discussion boards	Comm. devices (text, cell phones, IM)	Information sources	Comm. devices	Comm. devices
Blogs, info sites	Connectivity (SNS)	Discussion boards	Entertainment, games, creativity	Connectivity (SNS
Creative activities			Utilities	Discussion boards

Parent use of ICT aligned with the five domains of parenting/parent education (PECCFI, MNAFEE.org). Adapted from Walker & Rudi, 2015.

Parenting functions as listed on the survey were coded to align with one of the five domains in the parent education framework. We then observed, by type of technology, how parents used technology to fulfill that particular function. With regard to parent development, approximately 40–55% of the parents identified using technology to resolve conflicting information, explore perspectives, confirm their beliefs, express themselves, and provide advice to others. Smaller portions indicated that they use technology to communicate with the child or to keep up with the child's friends (note: the average age of children in the sample was 6). The highest numbers, at more than 50%, were indicated for fulfilling child development through seeking information, identifying problems, and normalizing parents' observation of children's behavior. Percentages were high as well for the family development and the culture and community domains. In family development, 92% of parents reported using technology for communication with non-residential family members. Technology was also used by more than half to review products and to have fun with the family. With regard to culture and community, more than half reported using technology to communicate with friends, make professional connections, and receive support.

The types of technologies used to fulfill each of these parenting actions varied. For parent development, discussion boards, blogs, and creative activities were most frequently mentioned. Discussion boards and information sources were also identified when seeking information about child's development. For the parent-child relationship, communication devices were obviously used (e.g., texting, calling, instant messaging). For family development, communication devices were used for connecting with non-residential family members, and for shared entertainment and games. Utility functions such as navigation tools or websites were used for purchasing goods for the family. And finally, communication devices, discussion boards, and social media were mentioned for building community and maintaining a family culture.

Through this simple research, we can see that the same technology that promotes the parents' own development can be used to strengthen knowledge about child development, while also building a stronger social network of support. No one device or application fulfills all functions, yet a single function (like learning more about child development or building parent confidence) can be facilitated by a variety of tech. These applications reflect technology popular a decade ago; a more contemporary investigation would likely address specific types of social media, videoconferencing, and use of smart devices like Alexa.

Individualized use

Research indicates that parent technology use varies, a finding that validates our understanding of individual differences. Use is complementary to that of available resources, devices, or applications; it also supplements what is not available elsewhere. Parents also draw on personal experience. And parents use communication tools as a complement to face-to-face connections with family friends and others. While parents will text, FaceTime, Zoom, and send private messages to their children and others in their lives, for many these are a complement to face-to-face interactions.

Parents seek information online to complement to other information sources. While they may read blogs, Google, and read websites, they also are talking to pediatricians and to friends and family members, and may be reading books or parenting magazines (Duggan et al., 2015).

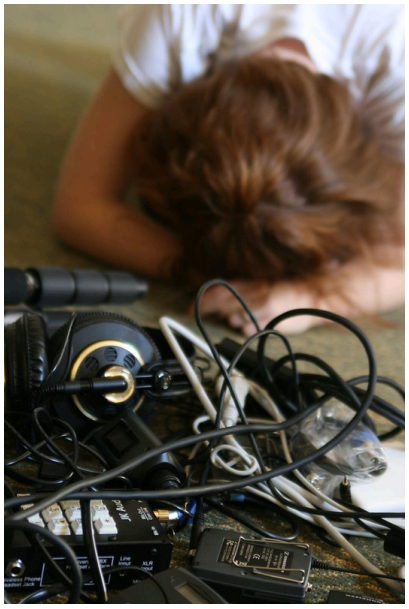
Virtual contacts complement or enhance what is available socially offline, providing, for example, additional ways to connect with families and expanding the size of social networks. A parent may have networks of friends at work and in the neighborhood to whom she turns to for advice and information on parenting. A Facebook group for parents of young children can exist for her as a complementary source of information and support to her offline resources.

Finally, parents' use of technology can supplement what is missing in offline lives. Early research on parents' internet use identified that parents most likely to use discussion forums were those whose children had special needs (e.g., Scharer, 2005). Parents went online to find a community and information not available to them in their face-to-face world. They found great relief communicating and connecting with others who had experience raising a child who had the same condition or diagnosis, a community in which they felt no judgment and could share their own experiences.

Steinmetz's *Time* article (2015), "Help, my parents are millennials," describes variations in attitudes, opinions, and behaviors between those who are Millennials (born between 1981 and 1996), Gen Xers (born between 1965 and 1980), and Baby Boomers (born between 1945 and 1965). Millennials, for example, are more likely to purchase gender-neutral toys for their children and to report feeling judged by other parents. Consider how these attitudes might play out differently in ICT interactive behavior. Now that young adults represent a new generation (Gen Z, born after 1996) what attitudinal or perspective shifts might be revealed in their parenting, and how might their parenting interests be reflected differently in their technology use?

Regardless of demographic differences, parents are humans and will vary in their interests.

"I Love Internet :: Social Media Week Milano :: Il Festival della rete" by br1dotcom is licensed under CC BY 2.0.



"I hate technology" by quinn.anya is licensed under CC BY-SA 2.0.

Interesting research has identified typologies of parents in terms of the time they spend online. Some parents are information seekers, using technology primarily to read information about child development and children's health and well-being. Some love using a variety of social media discussion groups, Facebook pages, Tik-Tok channels and more to interact with other parents and extend their time offline in social ways. Some parents are content creators, writing blogs and curating product information on products to encourage dialogue and often to seek emotional support and validation for their parenting.

These relationships between parent technology use and their parenting and interactions with children are not always clean, nor directional. As demonstrated by McDaniel and Radesky (2018), a bidirectional relationship can occur between parent and child and technology. Their study revealed that child behavior can relate to stress in the parent, who turns to technology for distraction, in turn exacerbating the children's behavior that is causing the stress.

In summary, as with other technology users, parents use a range of devices and applications to fulfill a range of functions. As with others, they vary in their use, attitudes towards use, and comfort with use. With regard to the parenting role, parents interact with their children with technology, using technology to parent. Parents also parent about technology.

The next chapter is on parent-child relationships and technology. Technology plays a role in influencing parents' knowledge, attitudes, skills, and beliefs. Parents gather and exchange information, and seek out support from others. Technology and the internet can complement or supplement what is available or missing from parents' offline lives. Regarding parent learning and social support, technology and virtual environments can play particularly meaningful roles in mobilizing the social resources that aid in parent learning, behavior, interactions with their children, and child outcomes.

Parent Technology Use as Direct and Indirect Influence on the Child

Given the actions of parenting as revealed through behaviors, attitudes, skills, and knowledge directly with or on behalf of their children, and the internal, historical, social and environmental influences on parenting, there are three dimensions of technology use by parents:

1. Parenting ABOUT technology
2. Parenting WITH technology
3. Technology use AIDING the parent and parenting

After a brief introduction here, the first two actions will discussed in more depth in Chapter 7. More attention in this chapter will be paid to the third way that parents use technology: on behalf of themselves as parents.

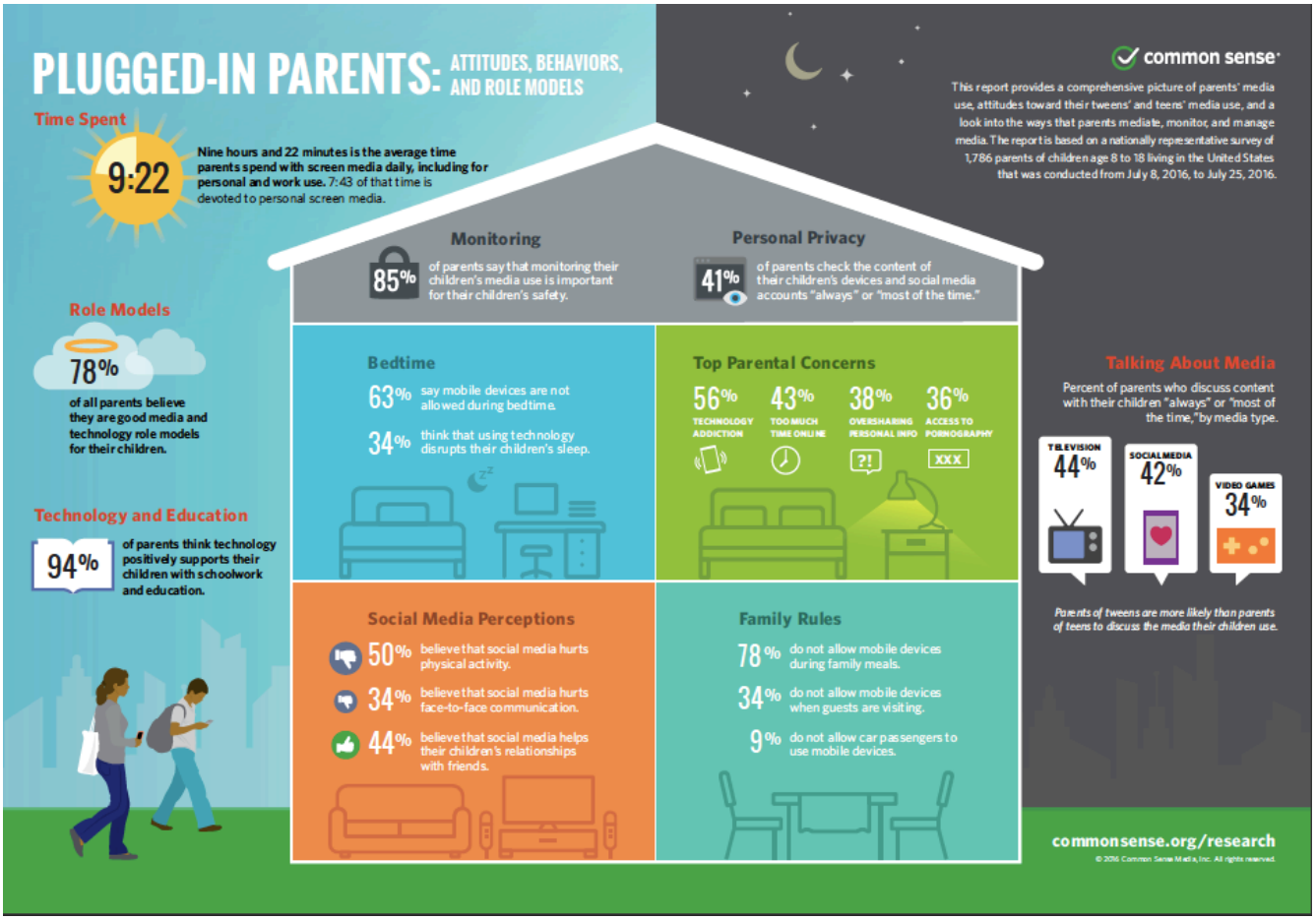
Parenting about (the child's use of) technology and parenting the child with technology

"Eaglebrook-School-Country-Fair-2014-Classes201410167718" by EaglebrookSchool is licensed under CC BY 2.0.

Adding to parents' scope of practice is their child's well-being in the use of information and communications technology. Therefore, among many other topics, parents parent about the content topic of children's technology. Parental monitoring, asserting controls, and mediating screen time have been the centerpiece of research and action for childrearing support for at least the last decade (Auxier et al., 2020; Blum-Ross et al., 2018; Coyne et al., 2017; Livingstone & Blum-Ross, 2020; Livingstone et al., 2018; Nathanson, 2018; Wartella et al., 2013). On this, parents vary widely, influenced by their perspectives and understanding of technology's effects. For example, parents' attitudes along with their own media use influence young children's use of technology in general, and specifically related to math and science. Parenting confidence and parent media patterns also influence their actions towards children's media use. Parents with greater confidence around technology are more likely to monitor and interact with children around media use (Commonsense Media, 2016). And parents vary in terms of their own behavior around media consumption. Households that are more media-centric have more screens that are on for more hours of the day, and attitudes toward children's technology ownership and use are more lax, compared with those of parents who are more media-moderate or media-light (Wartella et al., 2013).

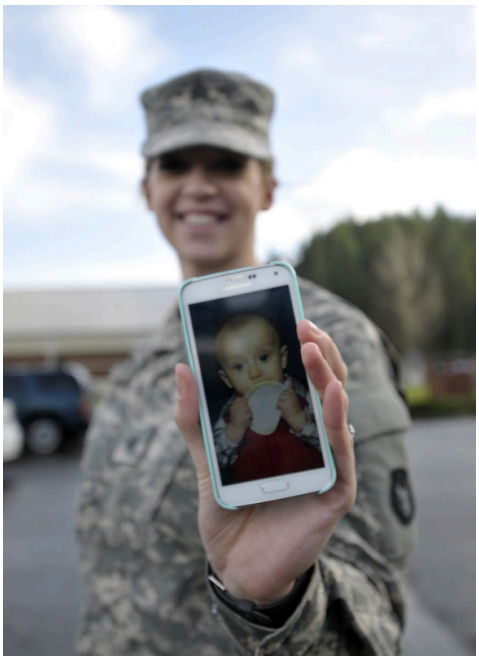
These influences aren't reserved for families of younger children and teens. During the pandemic, parents' attitudes toward using technology for distance learning in universities showed variation. Those less concerned about financial impacts, and who saw benefits held more favorable views of distance learning technology (Mahasneh et al., 2021), which factored into their encouragement of their children. Chapter 7 explores this topic in more depth.

As illustrated by this graphic of parents' technology use relative to that of teens, parental monitoring and talking about media with children is balanced with their own sizeable consumption of screen time and with modeling media behavior to children (Lauricella et al., 2016).



Plugged In Parents: Attitudes, Behaviors, and Role Models. Common Sense Parent Census Infographic. https://www.commonsensemedia.org/plugged-in-parents-of-tweens-and-teens-2016-infographic

Technology is also a vehicle through which parents' parent. They communicate, support, nurture, and guide their children through texting, video, and voice communication (Dworkin et al., 2019). Time interacting together with technology, such as through gaming, co-viewing movies, or engaging in a "maker space" (a facility for creating with materials and developing critical thinking skills; see www.makerspaces.com), can strengthen parent-child cohesion (Coyne et al., 2017; Commonsense Media, 2016; Ito et al., 2020). Yet parents using technology to parent can produce conflict in the parent-child relationship as children feel their agency threatened through un-agreed upon monitoring (Blackwell et al., 2016; Coyne et al., 2017; Commonsense Media, 2016; Livingstone et al., 2018). Personal use can also create a distraction and diminish attention to caregiving, which affects the quality of the relationship (Beamish et al., 2019).



"Red Bull moms take care of business" by Minnesota National Guard is licensed under CC BY 2.0.

Technology use AIDING the parent and parenting

A third way in which parents use technology is as support for their parenting. In this way, technology plays a more indirect role, connecting parents to information, social and emotional support, validation, and skills development. Reading helpful tips on infant sleep on a parenting blog, for example, may boost confidence in ways that show in childrearing. There is, of course, also the possibility of negative influences on the parent, perhaps through negative messages or challenges to their perspectives and identity. As an example, parent confidence may be affected when other parents post about their "perfect" children on Facebook. To examine parents' use of technology to support themselves in the role is to see the parent as a developing adult, and the use of technology as fulfilling personal and adult roles as well as parent roles.

Gathering information

Gathering information about child development and health is a major way that parents use technology to support their parenting competence and comfort (Baker et al., 2017; Livingstone et al., 2018; Myers-Walls & Dworkin, 2015; Zero to Three, 2016). Recent data suggests that 40% of U.S. parents with children up to age 17, and 65% of Australian parents of children ages 2–12, get information from the web (Auxier et al., 2020; Baker et al., 2017). Parents who are of higher socioeconomic status and those with children with special needs are more likely to use online help (Zhang & Livingstone, 2019). Online sources are used to complement

parents' other, more personal, and proximal sources, including friends and family, teachers, pediatricians, and other professionals (Myers-Walls & Dworkin, 2015; Zero to Three, 2016).

While this can be useful for problem-solving and resolving parents' answers about childrearing and child development, there is the potential for misinformation. In a *Wired* magazine article in early 2022 (Jankowicz), the author examined pregnancy-related apps for new mothers. She notes that the majority of apps are run by "lifestyle" companies powered by advertising revenue. The aim is less about supplying accurate information about the stages of pregnancy and transition to parenthood, and more about connecting the user to other platforms and using user data. Worse, the sites can promote potentially harmful misinformation about pregnancy and childbirth.

And while research suggests that a minority of parents participate in parenting education online (at least, pre-COVID; Walker & Rudi, 2014; Zero to Three, 2016), delivery of parenting education programs wholesale or as a complement to face-to-face efforts is increasingly available (McLean et al., 2017; Walker, 2020). Demographic variation reveals that parents in lower socioeconomic groups, particularly those with less formal education and who live in higher-stress environments, are more open to getting information from websites than to participating in seminars or individually tailored programs (e.g., evidence-based programs adapted for online delivery). This suggests that outreach methods need to appeal to a wide range of parents to reduce equity gaps in participation. Given the conversion to online-only parenting education programming during COVID-19, it will be interesting to see if attitudes change with a return to face-to-face opportunities. Chapter 11 will explore technology applications in the delivery of parenting education.

Exchanging social support

Robert Couse-Baker is marked with CC BY 2.0

Informal exchanges with peers through social media, seeking out information on childrearing on a website, pursuing creative ways to express oneself by blogging or interest board (e.g., Pinterest) and videoconferencing with other parents all contribute to parents' mental health, sense of identity, and feelings of connectedness (Walker & Rudi, 2014). Meaningful support for the parenting role comes through parents' use of social media and other social technologies to interact with other parents, family, and friends. In the U.S., 29% of parents report getting information from social media, and 19% from message boards. Participation in discussion forums and social media offers parents emotional validation, normalization of concerns, and tailored information for problem-solving and decision-making

(Drentea & Moren-Cross, 2005; Walker & Rudi, 2014). Indeed, some of the earliest research on parents' technology use was in the health care community, as nurses observed parents with special needs children using discussion forums to exchange information and ideas (Scharer, 2005). More recent research has identified social media and blogging as a form of expression and support that is valuable for parents of children with special needs/health challenges (Blum-Ross & Livingstone, 2017; Nagelhout et al., 2018) and for other marginalized groups of parents, including LGBTQ (Blackwell et al., 2016). And using social media during transition points in parenting can be validating and bridge identity shifts to new roles (Bartholomew et al., 2012). Younger parents and mothers are especially likely to use social media to share information about their children, compared with fathers and older parents (Auxier et al., 2020; Steinmetz, 2015). Blum-Ross and Livingstone (2017) write that "sharenting" helps manage the juggling of identities as parent, problem solver, and information seeker. Still, fathers and grandparents, foster parents and other caregivers are a significant presence among bloggers. Blogging, and interacting on social media, enables parents and caregivers to transmit images and pictures of the parent's child and of themselves in ways that deepen the sense of themselves as caregivers and perhaps anticipate themselves into the future.

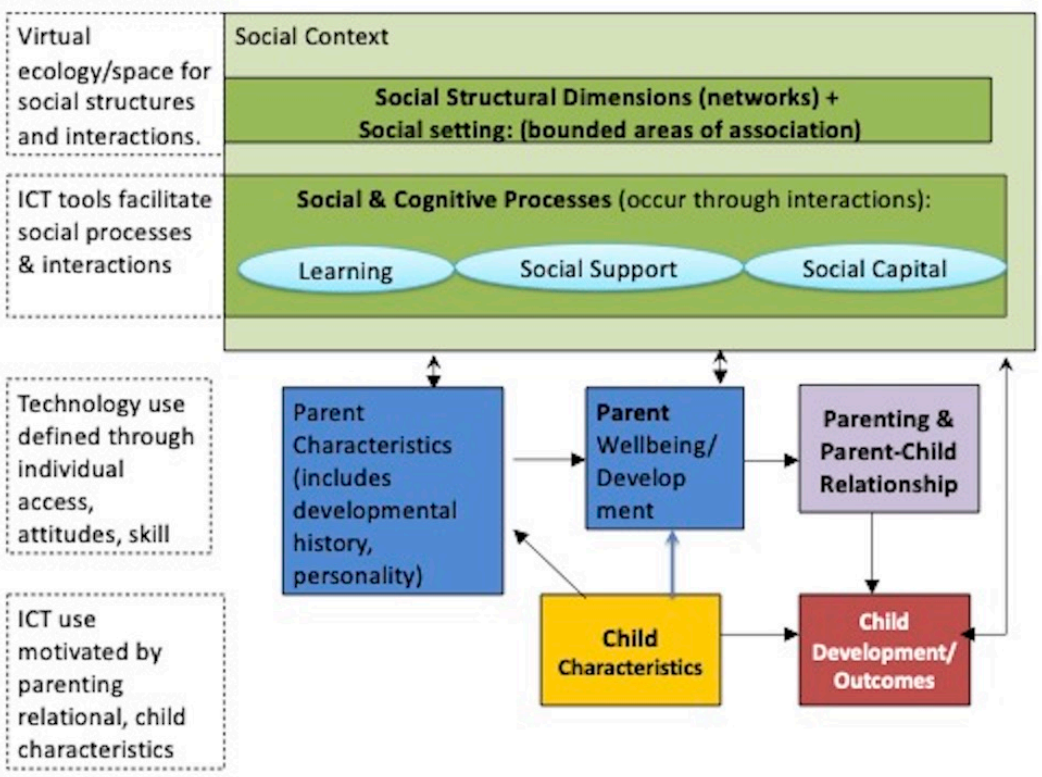
For some parents, however sharing their parenting experiences and children's lives online brings up feelings of guilt and ethical dilemmas. And as noted, such use can also override children's privacy and opinions on the use of their personal information. In preparation for a radio discussion on children's privacy online, the author ran across a Buzzfeed news item on "pumpkin butt." Parents submitted pictures of their baby's bottom painted with a pumpkin for a voter competition. While to many this may be cute, and it may provide some parents a sense of connection and even pride if their baby is voted for, it can also be seen as an invasion of the child's privacy and contributing to the commodification of children's bodies.

There is particular value in virtual exchanges that strengthen parents' social capital and its personal and parenting benefits (McLean et al., 2017). Definitions of social capital vary by structural (e.g., network ties that forge and define relationships) or content impacts (e.g., quality of interaction and exchanges across ties that maintain a sense of cohesion). Person-to-person repeated exchange within groups can produce familiarity and feelings of trust, strengthening bonding social capital. Parents' interactions through social networking can also form bridging social capital, or connections to new networks which offer new, more novel connections, and the opportunity to learn new information about parenting. Cochran's perspective on parents' personal social networks (Cochran & Walker, 2005), supported by research and later applied to parents' use of the internet (Walker & Greenhow, 2010), indicates that heterogeneous

"Sharenting" online can offer parents ways to express themselves in the caregiving identity, yet some do so with a sense of guilt knowing the ethical dilemma of invading their child's privacy.

connections are positive for parents through the diversity of perspectives and acquisition of novel information.

There is evidence of the valuable impact of social network membership and processes for parents' actions and attitudes in parenting and, as a result, positive albeit indirect impacts on child outcomes. Given what we know about relational processes that promote learning by adults (e.g., McShane et al., 2014; Brookfield, 2020), the author has asserted the value of these online social connections as providing social learning outcomes in complement with social support and social capital (Walker, 2015). Jointly, these social products inform and support the parent's assets brought to parenting. The figure below demonstrates the complexity of factors involved in parent technology use intersecting with social network membership, engagement, and eventual outcomes. It demonstrates on the right, the social structures and processes that provide resources to parents, which contribute to the parent's well-being, the relationship with the child, and potential outcomes. These social elements also take place in virtual worlds and through the use of digital media (left). Access to the internet and digital media, and skills and comfort in using them, further vary parents' access to and use of their social supports as assets in their parenting.



When interacting online, particularly using social media, some parents proceed with caution. Online

interactions for parents can be challenging for some. Fear of judgment, self-comparison, and diminished confidence in childrearing can result (Steinmetz, 2015). Additional researchers have shown that discussions can also promote particular perspectives. For example, Madge and O'Connor (2006) note that while mothers' exchanges on parenting through discussion forums were viewed as helpful at the time, those taking to the internet reinforced a more traditional stereotype of mothering. In the search for validation and content — an issue that affects all parents (Cavalcante, 2015; Fraser & Llewellen, 2015) — individuals in caregiving roles may need to find the best "fit" between content and their values for the experience to be most meaningful.

With this background on parenting revealing intentions and goals of those who hold this role in families, we begin to see the ways that ICT can help to fulfill those goals and how differences in access, comfort, skill using technology, and parent profiles reveal variation in this population. In this chapter we offer an essential though often under-discussed dimension of parenting: parent self-development and self-care. Indeed, social media, applications, internet searches, and exchanges of information present an array of opportunities for parents to find support for the parenting role.

6.2 REFERENCES

Auxier, B., Anderson, M., Perrin, A., and Turner, E. (2020, July 28). Parenting Kids in the Age of Screens. Pew Internet and American Life.

Azar, S. T. (2003). Adult development and parenthood: A social-cognitive perspective. In J. Demick & C. Andreoletti (Eds.), Handbook of adult development (pp. 391-415). New York: Springer.

Baker, S., Sanders, M. R., and Morawska, A. (2017). Who uses online parenting support? A cross-sectional survey exploring Australian parents' internet use for parenting. *Journal of Child and Family Studies*, 26(3), 916-927.

Bartholomew, M., Schoppe-Sullivan, S., Glassman, M., Kamp Dush, C. & Sullivan, J. (2012). New parents' facebook use at the transition to parenthood. *Family Relations* 61, 455 – 469.

Beamish, N., Fisher, J., and Rowe, H. (2019). Parents' use of mobile computing devices, caregiving and the social and emotional development of children: a systematic review of the evidence. *Australasian Psychiatry*, 27(2), 132-143.

Belsky, J. (1984.) The determinants of parenting. *Child Development*, 55 (1), 83-96.

Blackwell, L., Gardiner, E., and Schoenebeck, S. (2016, February). Managing expectations: Technology tensions among parents and teens. In Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work and Social Computing pp. 1390-1401.

Blum-Ross, A., Donoso, V., Dinh, T., Mascheroni, G., O'Neill, B., Riesmeyer, C., and Stoilova, M. (2018). Looking forward: Technological and social change in the lives of European children and young people. Report for the ICT Coalition for Children Online. Brussels: ICT Coalition.

Blum-Ross, A. and Livingstone, S. (2017) '"Sharenting", parent blogging, and the boundaries of the digital self', *Popular Communication,* 15(2): 110–125.

Bronfenbrenner, U. (1995). Developmental ecology through space and time: A future perspective. In P. Moen, G. Elder Jr. and K. Luscher (Eds), Examining lives in context: Perspectives on the ecology of human development. Washington, DC: American Psychological Association, pp. 619-647.

Brookfield, S. (2020) Teaching for Critical thinking. Ch 12. pp. 229-245. In *Handbook of Research on Ethical*

Challenges in Higher Education Leadership and Administration. V. Wang, Ed. IGI Global publications. DOI: 10.4018/978-1-7998-4141-8.ch012

Cavalcante, A. (2015). Anxious displacements: The representation of gay parenting on Modern Family and The New Normal and the management of cultural anxiety. *Television & New Media*, *16*(5), 454-471.

Cochran, M. & Walker, S. (2005). Parenting and Personal Social Networks. In T. Luster and L. Ogakaki, Eds. Parenting: An Ecological Approach. Mahwah, NJ: Earlbaum.

CommonsenseMedia (2016). The Commonsense Census: Plugged-in Parents of Tweens and Teens, Commonsense Media. Retrieved from https://www.commonsensemedia.org/research/the-common-sense-census-plugged-in-parents-of-tweens-and-teens-2016

Coyne, S. M., Radesky, J., Collier, K. M., Gentile, D. A., Ruh Linder, J., Nathanson, A. I., Rasmussen, E. E., Reich, S. M., and Rogers, J. (2017). Parenting and digital media. Pediatrics, 140, s112–s116.

Drentea, P., & Moren-Cross, J. (2005). Social capital and social support on the web: The case of an Internet mother site. Sociology of Health and Illness, 27, 920-943.

Duggan, M., Lenhart, A., Lampe, C., Ellison, N.B. (2015) Parents and Social Media. Pew Research Center.

Dworkin, J., Hessel, H., and LeBouef, S. (2019). The Use of Communication Technology in the Context of Adolescent and Family Development: An Integration of Family and Media Theories. *Journal of Family Theory and Review*, 11(4), 510-523.

Fraser, V., & Llewellyn, G. (2015). Good, bad or absent: Discourses of parents with disabilities in Australian news media. *Journal of Applied Research in Intellectual Disabilities*, *28*(4), 319-329.

Galinsky, E. (1987). The six stages of parenthood. Perseus Books.

Ito, M., Arum, A., Conley, D., Gutiérrez, K., Kirshner, B., Livingstone, S., Michalchik, V., Penuel, W., Peppler, K., Pinkard, N. 2020. The Connected Learning Research Network: Reflections on a Decade of Engaged Scholarship. Irvine, CA: Connected Learning Alliance.

Jankowicz, N. (2022). The internet is failing moms to be. Wired. https://www.wired.com/story/pregnancy-apps-disinformation/

Johnson, B., Bergdahl, L., Horne, M., Richter, E., and Walters, M. (2014). A parenting competency model. *Parenting: Science and Practice,* 14: 92-120. doi: 10.1080/15295192.2014.914361

Katz, V. S., Moran, M. B., and Gonzalez, C. (2018). Connecting with technology in lower-income US families. *New Media and Society*, 20(7), 2509-2533.

Lauricella, A. R., Cingel, D. P., Beaudoin-Ryan, L., Robb, M. B., Saphir, M., & Wartella, E. A. (2016).The Common Sense census: Plugged-in parents of tweens and teens. San Francisco, CA: Common Sense Media.

Lim, S. S. (2016). 'Through the tablet glass: transcendent parenting in an era of mobile media and cloud computing.' *Journal of Children and Media*, 10(1), 21–29. https://doi.org/10.1080/17482798.2015.1121896

Livingstone, S. (2021, March 3). "I recognise how important technology is, now more than ever": the dilemmas of digital parenting. Parenting for a Digital Future.

Livingstone, S., & A. Blum-Ross (2020). Parenting for a Digital Future. How hopes and fears about technology share children's lives. New York: Oxford University Press.

Livingstone, S., Blum-Ross, A., Pavlick, J., and Olafsson, K. (2018). In the digital home, how do parents support their children and who supports them? Parenting for a Digital Future: Survey Report 1. Department of Media and Communications, The London School of Economics and Political Science, London, UK.

Madge, C. & O'Connor, H. (2006). Parenting gone wired: empowerment of new mothers on the Internet? *Social and cultural geography*, 7 (2), 199-220.

Mahasneh, O., Murad, O. S., & Al-Shuaybat, W. A. (2021). Factors Affecting Parents' Acceptance of Distance E-LearningAccording of The Corona Pandemic. Multicultural Education, 7(6).

Marienau, C. & Segal, J. (2006). Parents as developing adult learners. *Child Welfare*, 85(5), 768-784.

McDaniel, B. T., & Radesky, J. S. (2018). Technoference: longitudinal associations between parent technology use, parenting stress, and child behavior problems. *Pediatric Research*, 84, 210-218. https://doi.org/10.1038/s41390-018-0052-6

McLean, K., Edwards, S., and Morris, H. (2017). Community playgroup social media and parental learning about young children's play. *Computers and Education*, 115, 201-210.

McShane, I., Cook, K., Sinclair, S. Keam, G. and Fry, J.. (2016) "Relationships Matter: The Social and Economic Benefits of Community Playgroups." RMIT. A Research Report Prepared for Playgroup Australia.

Myers-Walls, J. A., and Dworkin, J. (2015). Parenting education without borders: web-based outreach. In Ponzetti, J., (Ed.) Evidence-based parenting education: A global perspective. pp. 149-166. New York, NY: Routledge.

Nagelhout, E. S., Linder, L. A., Austin, T., Parsons, B. G., Scott, B., Gardner, E., ... and Wu, Y. P. (2018).

Social media use among parents and caregivers of children with cancer. *Journal of Pediatric Oncology Nursing*, 35(6), 399-405.

Nathanson, A. I. (2018). How parents manage young children's mobile media use. Families and Technology, 9, 3-22. https://doi.org/10.1007/978-3-319-95540-7_1

Scharer, K. (2005). Internet social support for parents: The state of science. *Journal of Child and Adolescent Psychiatric Nursing*, 18 (1), 26-35.

Steinmetz, K. (2015, October). Help, my parents are millennials. *Time*, 35–43.

Super, C. M., & Harkness, S. (1986). The Developmental Niche: A Conceptualization at the Interface of Child and Culture. *International Journal of Behavioral Development*, 9, 545-569. https://doi.org/10.1177/016502548600900409

Walker, S. (2020). Parent Learning as Community of Practice and the Potential of an Online Platform. In *Progress in Education*. Volume 62. R. Nauta (Ed.) Hauppauge, NY: Nova.

Walker, S. (2015) Social dynamics of media use on parenting: A conceptual framework. In *Family Communication in the Age of Digital and Social Media, Carol Breuss, Ed. New York: Peter Lang.*

Walker, S., Dworkin, J. & Connell, J. (2011). Variation in Parent Use of Information and Communications Technology: Does Quantity Matter?. *Family and Consumer Sciences Research Journal*. 40(2), 106-119.

Walker, S. and Greenhow, C. (2010). The Internet and Human Relationships: Revisiting the Personal Social Networks of Parents Paper presented at the National Council on Family Relations, Theory Construction and Research Methodology workshop.

Walker, S & Rudi, J. (2014). Parenting Across the Social Ecology Facilitated by Information and Communications Technology: Implications for Research and Educational Design. *Journal of Human Sciences and Extension*, 2, 2-19.

Wartella, E., Rideout, V., Lauriella, A & Connell, S. (2013). Parenting in the Age of Digital Technology: A National Survey. Northwestern University, Center on Media and Human Development.

Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Cambridge, MA: Harvard University Press.

Zero to Three (2016). Tuning in National Parent Survey Report. Alexandria, VA: Zero to Three.

Zhang, D., and Livingstone, S. (2019). Inequalities in how parents support their children's development with digital technologies. Parenting for a digital future. London School of Economics.

6.3 LEARNING ACTIVITIES

Parents and technology use

Interview at least three different parents about their technology use. Compare and contrast what you hear from them in terms of the ways in which they use technology to support their parenting. Do they follow blogs or post on discussion forums? Do they use social media for connections with friends about parenting? Or might some of the parents not use technology at all for assistance in parenting Perhaps they search for information, but nothing more. Do they parent about technology (as in monitoring their children's use)? Compare and contrast what you learn from the parents. In what ways do they differ in their use of technology to support themselves as parents?

Parents and "sharenting"

Livingstone and Blum-Ross write about "sharenting" (2017)[1] when parents blog and microblog (such as in social media feeds). They challenge the value of blogging as a way of strengthening parent identity through self-expression, arguing instead that it compromises details of the child's or family's life. Select at least five blogs by parents, preferably all mothers or all fathers, and review at least 5–10 posts in each. Get a sense of the content of each post and of the overall themes presented by the blog. Compare the blogs. What is your take on the degree to which parents overshare and potentially compromise their children's identity and agency? What is your take on the value to parents' own confidence, validation of their choices as parents, and development?

1. *Popular Communication, 15*(2), 110–125. http://dx.doi.org/10.1080/15405702.2016.1223300

Pregnancy and childbirth apps

Inspect a random selection of apps related to pregnancy and childbirth. (You may want to create a junk email account to gain access to more internal features.) In your review, determine the real purpose of the apps, who is distributing them, and what they get in return for your free use. Examine the information provided. Is it scientifically and medically sound? How would you know? Which of the apps (if any) would you recommend to someone who is pregnant?

6.4 BLOG PROMPTS

For more than 20 years, Blogher has provided internet space and tools for women to write blogs. Many of these blogs are from mothers who express themselves and their thoughts and concerns about being a mother in today's society. Some offer parenting tips, or blend parenting with other personal activity interests (e.g., cooking, party planning, travel). Tens of thousands of women blog through Blogher, many with devoted followers. Consider the potential benefits and costs of this blogging.

- What does writing a parenting blog mean in terms of time cost and personal energy?
- What does it mean in terms of the commodification of a mother's image? Might she feel the need to "be" a certain kind of mother, or to share *certain* stories or images to capture readers in the busy marketplace of the internet?
- What might her sharing stories and images of her children and family mean to their sense of personal privacy? We might argue that personal blogging can be an extension and expression of the identity of motherhood that is positive for the woman's confidence, but what costs might it run to herself and her family?
- Considering the landscape of "mommy blogs," are there mothers' voices that are NOT represented?
- What about fathers? Other types of parents (e.g., grandparents, foster parents). Would their blogging be any different than mothers'? Why might their voices not be as represented as mothers?

Consider that your own technology use is, in part, a product of your generation, your exposure to technology, and the demand for use in your personal, school, and work life. And consider that parents who are part of your generation are influenced by what they are exposed to through technology, and that their behavior (shown by the amount of technology they consume) can model media habits to their children, and can shape their beliefs about themselves as role models and

about the influence of technology on their children. What are your thoughts & feelings about your future roles as parents or as caregivers and what your technology use might mean?

There are many parenting websites, discussion communities, Facebook groups, and other social groups and blogs. When you consider that we want parents to use these sites in ways that provide emotional support and accurate information, and that promote positive parenting, do they? Are engaging, readable, accurate? Are they gossipy, exclusionary, or downright hostile? For your post, construct criteria for web tools for parents, and then identify five tools to compare using your criteria. Based on your review, what can you gather about tools for parents? For mother? For fathers?

6.5 ADDITIONAL RESOURCES & READINGS

Blogs

- Parenting for a Digital Future (London School of Economics; Sonia Livingstone's research): https://blogs.lse.ac.uk/parenting4digitalfuture/

Books and Reports

- Livingstone, S. and Blum-Ross, A. (2020): Parenting for a Digital Future: How Hopes and Fears About Technology Shape Children's Lives.
- McShane, Ian, Kay Cook, Sarah Sinclair, Georgia Keam and Jane Fry. "Relationships Matter: The Social and Economic Benefits of Community Playgroups." A Research Report Prepared for Playgroup Australia (2016)

Journal Articles

- Beamish, Nicola, Jane Fisher and Heather Rowe. "Parents' use of mobile computing devices, caregiving and the social and emotional development of children: a systematic review of the evidence." *Australasian Psychiatry* 27 (2). (2019). 132-143.
- Collin, C. (2019). Millennials are the most tech-saturated generation of parents yet it isn't always a good thing. https://www.washingtonpost.com/lifestyle/on-parenting/millennials-are-the-most-tech-saturated-generation-of-parents-yet-it-isnt-always-a-good-thing/2019/08/22/e2c2e264-afd2-11e9-8e77-03b30bc29f64_story.html
- Hall, Cristin M., and Karen L. Bierman. "Technology-assisted interventions for parents of young children: Emerging practices, current research, and future directions." *Early Childhood Research Quarterly* 33 (2015): 21-32.
- Haslam, Divna M., Amelia Tee, and Sabine Baker. "The use of social media as a mechanism of social support in parents." *Journal of Child and Family Studies* 26, no. 7 (2017): 2026-2037.
- Guldberg, Karen, and R. Pilkington. "A community of practice approach to the development of non-traditional learners through networked learning." *Journal of Computer Assisted Learning* 22, no. 3 (2006): 159-171.

- Livingstone, Sonia, Alicia Blum-Ross, Jennifer Pavlick and Kjartan Olafsson. "In the digital home, how do parents support their children and who supports them?" *Parenting for a Digital Future: Survey Report* 1. London School of Economics. (2018).
- Marienau, Catherine and Joy Segal. Parents as developing adult learners. *Child Welfare*, *85*(5), (2006) 768-784.
- New York Times The Weekly vlog: (2019). If you didn't 'sharent,' did you even parent? https://www.nytimes.com/2019/08/07/opinion/parents-social-media.html.

CHAPTER 7: TECHNOLOGY'S INFLUENCE ON PARENT-CHILD RELATIONSHIPS

7.1 TECHNOLOGY'S INFLUENCE ON PARENT-CHILD RELATIONSHIPS

Well, an element of conflict in any discussion's a very good thing.

It means everybody is taking part and nobody is left out.

—— from *Harvey* by Mary Chase

Chapter Insights

- Two concepts that underlie parent-child relationships: the emotional context of parenting style as the balance (or imbalance) of demandingness and warmth; and relationship dynamics as the coordination of agency/communion perspectives by parent and by child.
- Parental mediation can be active, restrictive, and indirect. Active mediation involves parent-child communication, parent engagement in media content exposure, and coordinated activity to negotiate rules.
- A variety of factors related to the parents (e.g., mediacentrism), the child (e.g., age) and the context (e.g., COVID-19 pandemic) can affect parent behavior on regulating children's use.
- Reverse mediation, or when children's knowledge of technology exceeds parents' and enacted to aid the parent's use, can be a potential conflict in the relationship.
- Conflict in the parent-child relationship might occur in several ways related to technology (e.g., through parental attempts to control technology use, negotiations on content).
- Differences exist in perceived conflict in families by child age (e.g., fewer parents report conflict with children under 8 years), and changes in parent control with age. Influences on parental control can relate to the child's advancing development (e.g., confidence, knowledge

of child's actual use, ability to stick with plans).

- Potential conflict to the parent-child relationship, to parenting, and to the child's well-being can occur through the parent's own technology use while with the child. Distractedness (or "technoference") has been related to a variety of parenting consequences.
- After reading this chapter, identify what you feel inspired by, the questions that remain for you, and the steps you can take for your own technology use to be more intentional.

Image by GSCSNJ, CC BY-NC 2.0

The Parent-Child Relationship

Relationships between parents and children are key to family well-being: as a vehicle to "successful" parenting, which means healthy child development; in the ongoing happiness of children and of parents; and in overall family satisfaction. The dynamic between parent and child is a reciprocal, emotional context through which information is communicated that guides the child's understanding of themselves and the world; through which the parent expresses their knowledge, experience, goals, and dreams for their child; and through which the parent develops (Azar, 2006; Harach & Kuczynski, 2005). And as parenting is a social role, one conferred with certain responsibility and expectation by the society and culture in which the family lives, the relationship with the child may be viewed differently. Some may view the role with more authoritarian rights; others may view the child's agency as a vehicle for expression that calls for a more democratic, authoritative approach (Bornstein, 2012). And some may be so overwhelmed by society's demands and challenges that they view the role with near resignation and give authority to the child to determine their path.

And each parent-child experience is different. As we viewed Belsky's multiple determinant model in Chapter 6, we saw how parents' perspectives change with experience, age, gender, socialization, and developmental history. Their interactions also depend on unique characteristics of the child. And the social context factors heavily on the parent-child dynamic, particularly as support is available to buffer stressors. In short, each relationship between a parent and child is like no other. It is forever in the life of the child, and it changes over time and with changes that occur in the lives of the parent and of the child. This transactional,

developmental, contextual consideration of the parent-child relationship over time has led scholars to call for using a life-course perspective when characterizing the enduring nature of the unique human experience as facilitated by technology (Dworkin et al., 2019; Shin et al., 2021).

In previous chapters we've gleaned the systemic, ecological, and biological forces on individuals in families and on family member subsets, and understood technology as an external force that influences the family through facilitating communication, aiding family life, and at times introducing conflict through differences in the ways that family members use technology. In Chapter 5 we understood the many ways technology can impact all domains of children's development — cognitive, social, psychological, and physical — and differences in use and impacts as children age from infants through young adults. In Chapter 6 we reviewed basic functions of parenting that emphasize the physical health and well-being of the child (keeping the child safe and thriving); guiding the many social, emotional, cognitive, and physical aspects of the child's development; and at times being an advocate for the child. We saw that technology could support the parent's role in childrearing — primarily as it supports the parent as a vehicle to social and informational support, and as an expression of the parent's identity. We also introduced other ways that parents use technology in the parenting role — with their children, and with technology as the focus of their parenting.

In this chapter we take a closer look at these dynamic elements of technology in the parent-child relationship, including how parents enact their role in childrearing through parenting about technology. Parents mediate, monitor, and moderate children's use, and in keeping their children safe and their technology use effective, parents also model ways to use technology through their own behavior. Yet there are certain "paradoxes" that affect technology's application to the parent-child relationship (Hessel & Dworkin, 2018; Jarvenpaa & Lang, 2005). For example, we see that generational differences in exposure to technology, comfort and skill in use, and motivations for use can create a shift in a relationship's power dynamic. This may result in friction between parent and child. This chapter will explore those possibilities and recommendations for peaceful negotiation.

Parents mediate, monitor, and moderate children's use, and in keeping their children safe and their technology use effective, parents also model ways to use technology through their own behavior.

This chapter will also look at technology use as it positively facilitates and influences the quality of parent-child relationship. Applications like FaceTime, texting, and social media are used to maintain communication and feelings of connectedness between parent and child, and can promote feelings of cohesion. This can be seen by the time college students spend texting or making video or voice calls to their parents while away (Vaterlaus et al., 2019), and in the heavy use of videoconferencing between parents and children, and grandparents and children, during COVID (Hamilton, et al, 2021). Indeed many parents and children are

quite positive about having mobile devices as a means for continued family contact. Media multiplexity theory posits that when a "repertoire" of technologies are used, the relationship is closer (McCurdy et al., 2022).

Montreux #8 by ClearFrost CC BY-SA 2.0

Yet relational use can also mean the nonverbal communication that comes when a parent or child ignores the other, distracted by technology. Sadly this is an all too real scenario that can disrupt quality in the relationship. Studies suggest that parental distraction by technology can compromise secure attachment and, consequently, child development (Kildare & Middlemiss, 2019; McDaniel, 2019). Parents can also overshare online, much to the embarrassment of the child (Blum-Ross & Livingstone, 2017). These elements of technology and the parent-child relationship are explored in this chapter.

Finally, analysts of the existing literature identify both assets and challenges of current technology and the ways in which they are used to facilitate the parent-child relationship (e.g., Shin et al., 2021). The chapter closes with their observations and questions to move us forward in this important family topic.

Parenting Frameworks

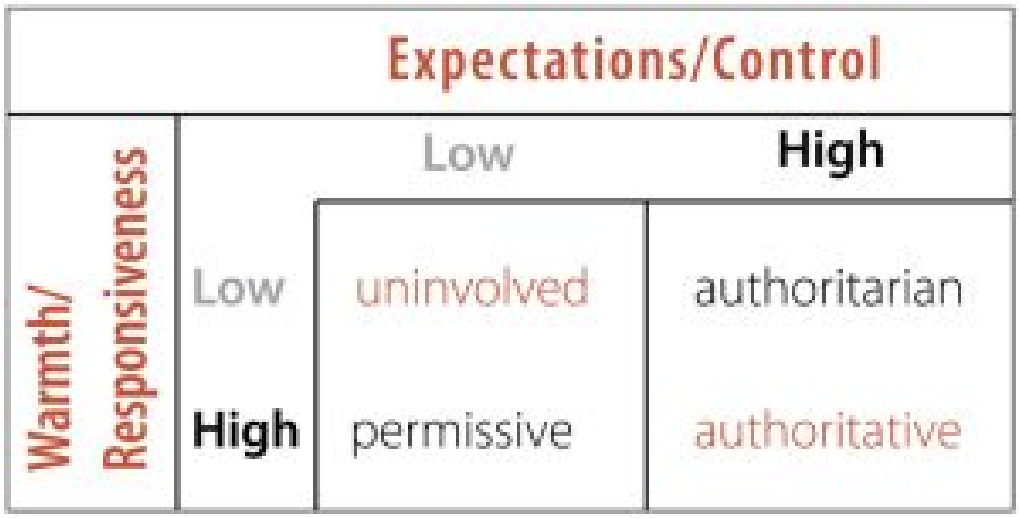
To set the stage for a deeper understanding of the parent-child relationship dynamic, we'll explore two parenting frameworks. One is a frequently used construct of the parent's style of communicating which offers an emotional context for the relationship. The other is less well known, yet presents the balanced perspective of both actors in the relationship and the balance required for connection.

Parenting style

Parenting style is frequently studied as the emotional context through which parents assert authority or invite children's input while guiding children's behavior (Darling & Steinberg, 1993, 2017; Smetana, 2017). Because of this, parenting style has been conceptually and empirically related to measurable elements of childrearing, such as demonstration of support, relational depth, and parent–child conflict (Aloia & Warren, 2019), which in turn contribute to myriad child outcomes (Smetana, 2017).

Baumrind's (1971) parenting style construct uses demonstrations at the intersection of warmth and

demandingness as indication of authoritative (balanced), authoritarian (high demandingness, low warmth), permissive (low demandingness, high warmth), and neglectful (low demandingness, low warmth) childrearing. Contemporary perspectives on Baumrind's construct encourage adaptations through a cultural and contextual lens, and consideration of factors such as parenting beliefs that moderate demonstrations of style (Smetana, 2017). More domain-specific applications have been suggested which are sensitive to the interplay between parent's goals, child's needs, and parenting processes.[1]



Baumrind's parenting styles. https://pressbooks.nscc.ca/lumenlife/chapter/emotional-and-social-development-in-early-childhood/

Examples of parenting style and parental mediation have found, in general, that those who are more permissive (higher in warmth over control) are less likely to restrict children's screen time, while those who are more authoritarian are more likely to do so. In a 2009 study, Bumpass and Werner explored types of parental technology regulation. They studied 113 children in 3rd to 6th grades and 109 mothers, identifying four clusters based on rules, enforcement strategies, consequences, and child adjustment. Traditional mothers reported rules related to time, permission, and co-viewing. Technology-specific mothers used blocking software, filtering, and removal of privileges. Passive mothers voiced rules that required only minimal parental supervision, and they were more watchful of the child's interest. And the children of parents with few rules (e.g., neglectful) reported slightly higher levels of internalizing problems such as depression and anxiety, and demonstrated slightly lower levels of prosocial behavior.

1. The volume of research on parenting styles should motivate readers interested in this concept and in parent-child relationships and technology to seek out specific, current, and cross-cultural/cultural literature.

Wartella et al. (2013) found a parallel between parenting style and family media practices. Looking at families with children between birth to 8 years, those in mediacentric households (reporting approximately 11 hours or more per day) were more permissive than those who were media moderate or "media light." Children in mediacentric homes are also more likely to have televisions in their bedrooms.

As demonstration of the complexity of applying the parenting style construct to the parent-child relationship with technology, a study of 504 parent-teen (12–17 year old) pairs proposed a model linking parenting style, online relational behaviors, and relational quality (Aloia & Warren, 2019). The researchers hypothesized that parental behaviors such as sending comforting messages and sharing material would mediate (i.e., be a conveyor for) parenting style and parent-child relationship quality including parent-child conflict and relational depth. In fact, although they validated previous research linking parenting style to relationship quality (e.g., enhanced parent-child conflict with authoritarian or permissive parenting), they found no relationship between parenting style, online relational behaviors by the parents, and relationship quality. Authoritarian parenting showed no relationship to any of the online strategies (comforting messages, material sharing, planning behaviors), and authoritative parenting showed positive and significant relationships to all three, yet permissive parenting also related significantly to two of the actions (comforting messages and material sharing). Planning behaviors and positive messages online were positively related to parental comfort, yet planning behaviors and material sharing were also related to perceived conflict. The authors observed methodological limitations (e.g., data from self-report) as a cause for the unexpected result, but also suggested that, with regard to mediated communication channels, parents and children may develop unique norms (p. 53). As Dworkin, et al. (2019) observe,

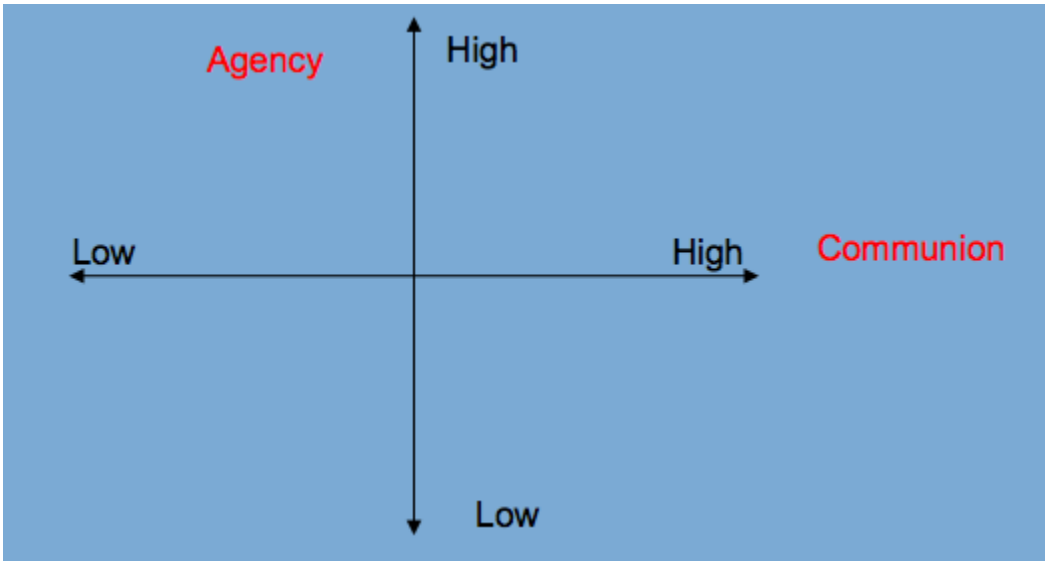
> "The insurgence of technology has completely changed the family landscape, challenging what we know and requiring a reassessment of how we understand family relationships during adolescence, a time when technology acquires new meaning for developing and maintaining interpersonal relationships. (p. 514)."

Agency and Communion

Facilitating the child's well-being related to technology through and while maintaining a positive relationship

In promoting the child's development, the relationship must be a balance of agency and communion by both individuals: assertion of the parent's power while keeping in mind communion with the child; promotion of the child's agency and independence, while keeping in mind the relationship.

with the child is no small feat for parents. In promoting the child's development, the relationship must be a balance of agency and communion by both individuals: assertion of the parent's power while keeping in mind communion with the child; promotion of the child's agency and independence, while keeping in mind the relationship. Unlike parenting style, which assesses the actions of the parent, **perspectives of agency and communion regard both actors in the relationship** (Heck & Pincus, 2001; Wiggins, 1991). Each person, in interaction with the other, asserts an action reflecting dimensions of both coordinates. Conflict arises when both are seeking agency (or power) more than communion. As related to parent-child relationships, conflicts occur with both child noncompliance and resistance to parents requests (high agency/low communion) and with parent resistance to children's requests (high agency/low communion) (Eisenberg, 1992).



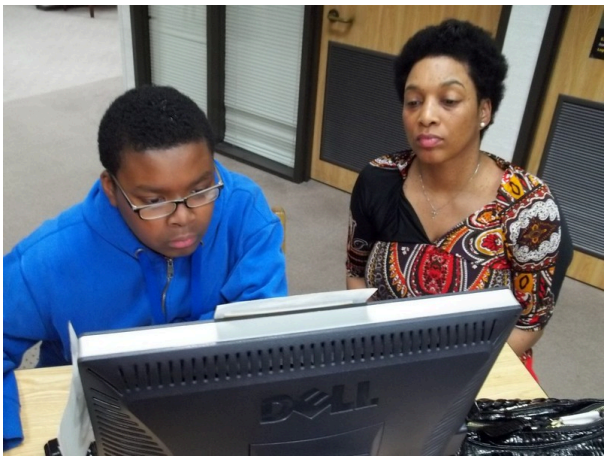
Agency and communion dimensions held by each actor in an interpersonal relationship (adapted from Wiggins, 1991).

For example, if my partner and I are deciding on a vacation location, and I want to go to the mountains and they want to go to the beach, as we both assert our agency (power) in our desires, we compromise the value of communion (joint happiness). We are at a standstill and our relationship suffers. If, however, through discussion, we listen to each other about the interests of the other with a true value for the relationship and

we come to compromise, we are more balanced in our individual agency and communion. Within the parent-child relationship, the parent's actions are tempered by understanding the developmental age and ability of the child, and changes in that development over time (Heck & Pincus, 2001). Agency by the parent is, in part, a personal expression of fulfilling the responsibilities of childrearing. The joint balance of agency and communion between parent and child in negotiation and understanding is within this structure of safety and growth.

The ecological context is a consideration for both parent-child relationship models when applied to new media and digital technology. As observed in previous chapters, interactions and dynamics of the relationship are influenced by ecological contexts of the microsystem of the family, and by exosystems, macrosystems, and chronosystems. These systems create influences on the development of both the child and the parent, and on the conditions in which the family lives. Technology access and use and qualities of the devices and applications are external and inherent influences in each of the systems that can both facilitate and challenge relational dynamics (Navarro & Tudge, 2022; Lanigan, 2009).

Parental Mediation and the Parent-Child Relationship



School Work CC BY-SA-ND 2.0. Moore Memorial Public Library

Fully 98% of parents in a recent U.S. study believe it is the parent's responsibility to protect children from online content (Auxier et al., 2020), compared to 65% expecting the government or technology (78%) companies to bear responsibility. While most parents (71%) are aware of and concerned about the amount of time children 11 and younger are spending with screens (Auxier et al., 2020), more (84%) report feeling confident that they know how much screen time is too much. Most (71%) believe that widespread use of smartphones might be harmful to their children's socioemotional learning. There is also concern by most about exposure to online predators (63%), sexually explicit content (60%), and violent content (59%). While bullying is a general concern of many parents, the majority (96% of parents of children 5–11) report that their child has not been bullied online (Auxier et al., 2020).

As parents assert their responsibilities to keep children safe online and guide their development, potential areas of conflict include:

1. Parental attempts to regulate use.
2. Parental concern over potentially negative consequences of internet use that can lead to over-restrictions on use.
3. An imbalance of power as expertise in technology use varies between parent and child.
4. Counter modeling of technology by parents' own use (e.g., do as I say, not as I do)
5. Parent invasion of children's online social space.

The majority of families don't perceive significant conflict around technology. Parents of young children (birth to age 8) don't perceive regulating children's technology use to be a conflict (Wartella et al., 2013). Even parents of older children (8 to 18 years) don't report significant struggles. In a 2016 Commonsense Media report, nearly two-thirds of parents (62%) disagreed that getting a child to turn off their smartphone or tablet was a struggle. The majority (85%) agreed that monitoring child safety was important, and nearly the same amount (81%) disagreed that the child was less likely to communicate face-to-face. That said, parents of boys and of those children with lower grades did report greater struggle. Similarly, a 2018 report of families in the European Union also determined that most do not report conflict on technology use (Livingstone et al., 2015).

In large part, there is optimism that the lack of conflict observed in families is the result of technology oversight integrated into parenting practices and the parent-child relationship. Technology and adolescence researcher Candice Ogders (2018) observes,

> Because online problems can be largely predicted by young people's vulnerabilities offline, much of our existing knowledge about what promotes healthy child development is applicable even in what seems like a foreign digital landscape. Strategies such as the maintenance of supportive parent–child relationships that encourage disclosure, parental involvement in the activities of their children, and the avoidance of overly restrictive or coercive monitoring will help to support adolescents and keep them safe online, just as they do offline.

In the next section we explore types of mediation practices in families, and the potential for conflict, and the opportunities for parent-child communication.

Mediation practices

Mediation practices vary by type and family (Rudi & Dworkin, 2018). Frequently, mediation practices are labeled as active or "enabling" (of positive technology use) or restrictive. A recent qualitative study with 40 parents of Australian teens (Page, 2021) identified five mediation strategies, three of which were active: physical observation, digital surveillance, and trust-based and discursive strategies; one restrictive: restriction and control through social or technical means; and one (as alluded to in Chapter 6), indirect: talking with other parents. Parents' active mediation occurs through direct parent-to-child interaction and conversation about media's effects. Co-viewing or co-participation (such as playing games) enables parents to actively mediate and monitor children's exposure and scaffold healthy use.

"Apple TV Parental Controls" by Wesley Fryer is licensed under CC BY 2.0.

More restrictive mediation means setting rules regarding the time spent or content viewed. It can also mean "e-rewards," in which parents withhold or grant technology use in recognition of good behavior.

More restrictive mediation means setting rules regarding the time spent or content viewed. It can also mean "e-rewards," in which parents withhold or grant technology use in recognition of good behavior. Across the approaches, restrictive mediation can reduce negative media effects, and co-viewing or "enabling" can enhance or facilitate media's positive effects (Coyne et al., 2017).

The EU Kids Online report (2020) surveyed children age 9–16 years in 19 countries. An average of 33% said their parents actively talk to them about the internet, 30% said sometimes, and 37% said never. Across countries, on average, higher percentages of children at younger ages reported parent discussion about the internet "at least sometimes:" 67% of 9–11 year olds, 61% of 12–14 year olds, and 54% of those 16 and older. When asked about active mediation strategies by parents, friends, and teachers, the highest percentages were reported for parents (e.g., 64% reported that parents "help me when something bothers me on the internet," compared with 45% friends and 35% teachers). Internet safety is a common topic of mediation, with 85% of EU children reporting that their parents talk about this. More technical controls are far less frequently reported (22%, on average, report parental control through GPS monitoring, use of software that blocks or filters internet content, or tracking applications) . Also, a minority of children — about 15% — reported restrictions on using a web camera, downloading music, or

using social media. That said, there are very clear differences in social media use restrictions by age, with the majority of children age 9–11 indicating that they cannot use social media.

The resolution of "conflict" with mediation is more nuanced than might be believed. Recent research with Australian families of teens revealed the range of ways that parents negotiating technology use with their teenagers (Page, 2021). Traditional mediation strategies may be used, but when they are not successful parents turn to other strategies, such as trust-based and discursive (reasoned negotiation) ones. Similarly, in interview research with pre-teen and teenage children (n=23) and their parents (n=18, Blackwell et al., 2016), children expressed the desire for shared expectations, rather than more attention to the issue of technology. They claimed that parents primarily told them what not to do, and didn't have a very accurate perception of either the quantity or quality of their screen time, or its effects on them. The interviews unlocked a more complex dynamic than of parents establishing rules and children breaking them. They identified a give-and-take in negotiating family life, in which children's needs and desires for technology use are taken into consideration, and reflect nuance — for example, when "rule violation" is acceptable. The authors concluded that families respect the developing teen's need for privacy and independence, while maintaining consistent and realistic expectations around work, attention, and the interests of the whole family to better manage household technology use.

Influences on parental mediation

Age of child

Parental restrictions on children's technology use largely curve with the child's age — with monitoring occurring through co-use in early childhood and middle childhood, then tapering off through adolescence.

"Pink DS" by Vineus is licensed under CC BY-NC-ND 2.0.

Naab (2018) refers to early childhood parenting mediation as "trusteeship," as the cognition and communication skill limitations of the very young child confer responsibilities on the parent to oversee their access and safe use as they make the transition to mediating children's own active, independent use. Co-viewing with young children appears to be predominantly through traditional media including books, TV, smartphones, and tablets, and less so with games (Connell et al., 2015). As an indication of the blend of parental agency in the role and accommodating a child's need, some parents may

use media to soothe babies who are fussy and demonstrate poor self-regulation. Mediation with school age children can be restrictive (limiting use of hardware or software, including taking away technology as a punishment), monitoring (tracking use, messages, and the child's location), and active (talking to children about their technology use) (Auxier et al., 2020; Blum-Ross et al., 2018; Livingstone et al., 2015).

Parents' conversations with their children about the content of their media also varies by child age. In Commonsense Media's 2016 study of parents and their teens and "tweens," parents were more likely to talk with their 12–14 year olds about media content while watching television, viewing apps on a device, using a computer for something other than homework, and playing videogames than with their teenagers; only when it came to social media did parents report higher frequencies of discussing content with children. Coyne et al. (2017) observe that research has yet to determine the interplay between parents' mediation strategies and more specific child characteristics.

Family demographic differences

Parents' education, income, gender, and age may influence mediation. Parents who are higher in income and educational attainment and who demonstrate more comfort with technology may exercise more mediational practices. Livingstone et al. (2015) determined socioeconomic differences in mediation strategies and attitudes in a sample of parents of primarily 4- to 7-year-old children in seven countries, including England, Finland, and Russia. Families with less income, formal education, who are non-White, and whose parents measure higher on depression are more likely to report higher rates of media consumption. When surveyed, many parents note that media provides a safe, inexpensive, and available form of entertainment for their children (Livingstone et al., 2018). Similarly, Wartella et al.'s (2013) observation of permissive parenting style and mediacentrism, noted earlier, also showed demographic correlations. Parents who were lower-income and single reported greater consumption of media in the household than those with other demographic characteristics. Media was reported as a favorite family activity, and mothers were more likely to report using it as a parenting tool (e.g., keeping a child occupied and safe while she attended to other duties). It should be noted, however, that in a U.S. sample Connell et al. (2015) found scant relationships to co-viewing with young children by parent education level or race. Parents in the EU with more education and

> Consider how factors such as income and education may relate to technology co-use and to mediation practices. How might living with limited resources and/or in possibly higher risk/lower resource neighborhoods affect opportunities for learning and time with children? for access to materials and devices? to daily stressors and demands that might relate to media consumption? To parent digital literacy?

income used a diversity of mediation strategies and encouraged non-school media use for learning. Cross national variation in parent mediation strategies has been found among the Finnish (actively engaged), Czech (passive), and in EU and UK countries and Russia (restrictive) (Helsper et al., 2013).

Mothers are more likely to demonstrate mediation than fathers (Connell et al., 2015; CSM, 2016). In their research among Portuguese school-age children, Ferreira et al. (2017) identified not only parent gender differences in mediation by type of activity (e.g., fathers actively mediating children's use while playing videogames), but gendered perspectives by children of parents' technology mediation. Children perceived fathers as more skilled in using technology, reported that their technology was for work (vs. mothers' devices that were to be shared), and that the father's mediation was more technical (e.g., uploading, removing software) and mother's more digital (e.g., exposure to content quality).

Parents' technology use, comfort, and skill

Parents' mediation strategies appear to relate to their attitudes toward technology, their competencies, and their own use, as observed in research in EU countries (Brito et al., 2017; Livingstone et al., 2018) and research in the US (e.g., Commonsense Media, 2016; Wartella et al., 2013). Observing the construct of reasoned action applied to technology acceptance (Ajzen, 1985), Nikken and Opree's (2018) survey of parents of young children (ages 1–9) in the Netherlands identified basic proficiency associated with the ease of active co-use. Advanced and basic proficiency with technology related to restrictive mediation, and advanced proficiency related to imposing technical restrictions. As Naab (2018) observed from in depth interviews with 29 parents of young children, parents are often uncertain about digital strategies and gain proficiency over time through interaction with their child, acquisition of knowledge about technology's affordances and challenges, and their own comfort with the interplay between themselves and their child's needs.

Parents are often uncertain about digital strategies and gain proficiency over time through interaction with their child, acquisition of knowledge about technology's affordances and challenges, and their own comfort with the interplay between themselves and their child's needs.

Parental use can influence the effectiveness of their mediation strategies. In the Commonsense Media study with over 1100 parents in 2016, parents spend more than 9 hours a day with screen media (especially personal media like smartphones) . A majority (78%) believe they are good media and technology models for their children. Yet research with parent-teen pairs indicates that when teens see parents' time on their phones similar to their own, they question parental advice and role modeling (Commonsense Media, 2016; Livingstone et al., 2018).

Child guidance and the power differential

The picture of parental mediation can get complicated as a generation of children grow up with technology in ways far different than those of their parents, and a potential power dynamic is shifted. Livingstone et al. 2018 observe this particularly in lower-income and immigrant homes, as children gain more comfort and skill with technology than their parents (Livingstone et al., 2018), or when children need to assist parents with language translation and technology. Perhaps this is why teens don't turn to parents for safety issues related to technology (Blum-Ross et al., 2018; Commonsense Media, 2018), or for information on sexual health. Flores and Barroso (2018) identified SES differences in parental technology comfort and use and the ability to talk to their teenagers about sex. Limited knowledge of how technology works, including realities of peer communication, privacy issues and laws, and the potential for exposure to imagery, act as barriers to parental communication that supports the child's sexual health.

Children are challenged when their parents are 'all thumbs' with using technology.

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://open.lib.umn.edu/technologyfamily/?p=408#oembed-1

Various scholars have characterized this complicated parent-child power dynamic (Dworkin et al., 2019). Livingstone (2009) refers to tech-knowledgeable children in the household as "youthful experts," while Katz (2010) calls them 'media brokers.' Correa (2014) labels the knowledge sharing as "bottom-up technology transmission," and the EU Kids on the Internet 2020 report calls this "reverse mediation." The latter reports that, across 19 countries, on average 40% of 9–16-year-olds report often or very often helping parents when they found something difficult online, and 29% sometimes helping parents. This differential in knowledge can upset the traditional family hierarchy. In interviews with parent-teen pairs in 1995, Kiesler et al. (2000) determined that fathers' attitudes prevented them from seeking help from their children about internet-related issues; the fathers voiced concern about a shift in their parental authority.

across 19 countries, on average 40% of 9–16-year-olds report often or very often helping parents when they found something difficult online, and 29% sometimes helping parents. This differential in knowledge can upset the traditional family hierarchy.

In a later study with Belgian parents and teens, Nelissen and Van den Bulck (2017) predicted that reports of conflict would correlate with parental requests for assistance with technology. The survey included questions like "Do you ever get into an argument with your child/with your parent about (a) television use, (b) tablet use, (c) smartphone use, or (d) computer/laptop use?" It used a 5-point Likert scale ranging from "(almost) never" (=0) to "(almost) always" (=4). With regard to media guidance, the pairs were asked "If you think about your children, how often do they teach you to use the following media, technologies, and/or applications?/If you think about your parents, how often do you teach them to use the following media, technologies, and/or applications?" Again, a 5-point Likert scale was used and applied to 13 technologiesm including smartphones, online purchases, and tablets. After controlling for demographic variables (including parent and child gender and age), there were significant associations between a parent help seeking/guidance by children and parent-child conflict. The authors observed that child guidance was dominant on some technologies — smartphones and specific apps — but not all.

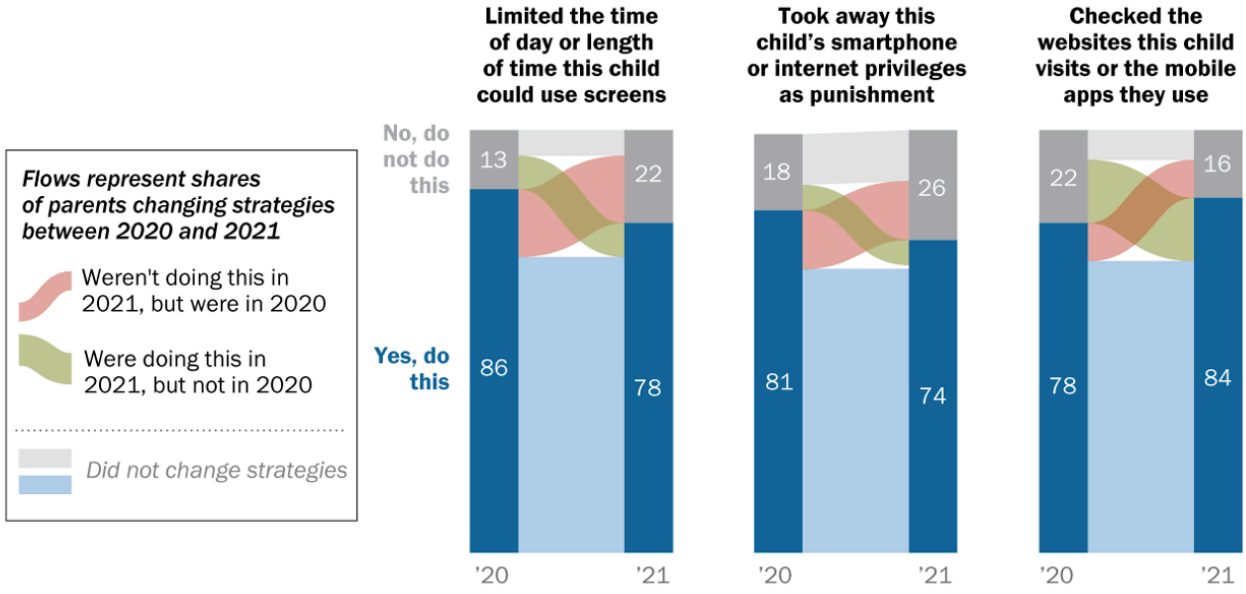
> With rapid changes in ICT and intergenerational relationships between parents and children, older adults, and grandchildren, the possibility for conflict from child guidance is present. With generations growing up with technology, will this potential for conflict remain or dissolve?

An example of context as influence on parental mediation: The COVID-19 pandemic

When conditions encourage children's technology use, parental mediation can shift. Clearly, the COVID-19 pandemic was an influence. As their children connected with friends, attended school, and sought out hobbies online during isolation and quarantine, parents' efforts to mediate children's screen time changed. As a report by Pew (2021) indicates, fewer parents reduced children's time on screens and took away children's smartphone privileges. On the other hand, more parents were active in checking children's exposure online, and parents' beliefs that their children spent too much time online nearly doubled. Among parents of children 11 or younger, in 2020, 28% felt their children spent too much time on their phones. In 2021, that percentage climbed to 42%. (See figure below).

Some parents' approaches to managing kids' screen time changed over the first year of the coronavirus pandemic

Among U.S. parents of a child who was age 5 to 11 in March 2020, % who ...



Note: Parents answered questions about the same child in both the March 2020 survey and the April 2021 survey. See "How we did this" for more details. Columns represent the overall shares in 2020 and 2021, while flows between columns represent patterns of answers among individuals who answered in both years. Those who did not give an answer in a given year are not shown in overall estimates.
Source: Survey of U.S. adults conducted April 12-18, 2021.

PEW RESEARCH CENTER

Parents' approaches to managing screen time 2020-2021. Pew Research

With regard to older children, parents reported that, during COVID, connections through videoconferencing, and with resident children through gaming and time spent together, deepened personal relationships (Joyce et al., 2021).

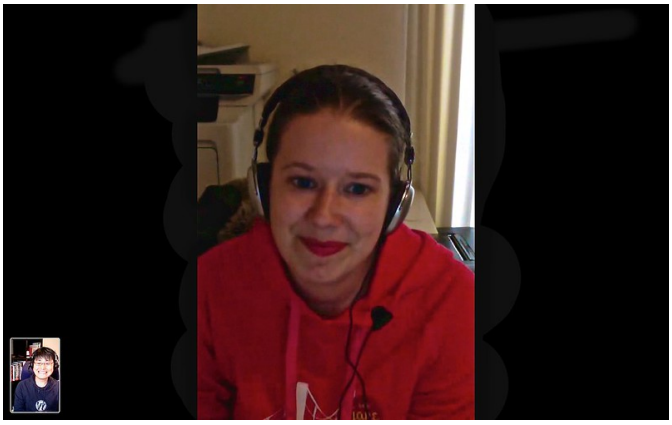
Technology's Role in Parent-Child Communication

The primary reason that parents secure phones for their children, even before age 12, is to communicate with them (Auxier et al., 2020). Through texting and through voice and video calls, parents can convey information to children that supports their development, enable coordination, and promote closeness. The efficiency of using ICT for communication also makes co-parenting relationships easier, such in the case of divorced and separated parents (Ganong et al., 2012; Saini & Pollack, 2018), and maintains parent-child

connections during separations, including military deployment (Carter & Renshaw, 2016) and immigration (Casmiro & Nico, 2016; Karraker, 2015).

Shin et al.'s (2021) literature review on technology designs that foster the parent-child relationship identified factors indicative of family qualities and technology-specific conditions. They include:

- reciprocity in the family,
- reinforcement of transparency,
- affection and trust,
- physical proxy of each other through an object or interface design,
- accessibility, level of technology sophistication and communication resource, and
- enjoyable, age-appropriate shared content between parents and children, and situational awareness and routine.



"I like FaceTime" Terry Chay CC 2.0-by NC

When parents and children are at a distance, system design that favors media richness (closer approximation of real life) and synchronicity, and the ability to maintain privacy, are positive. Challenges to the parent-child relationship occur through discrepancies in expected communication between parent and child(ren), through parents' complex emotions toward parenting due to their busy schedule, and, from the technological standpoint, from access limitations. As this section of the chapter indicates, the use of technology as a means to facilitate parent-child relationships is quite a complex issue. Although there are elements specific to digital media and the programming of the for communication and interaction, challenges arise through human factors inherent in the individuals and their relationships.

Connections, for example, may not always be smooth, and whether due to technology or the actor, complications can arise. Use of technology to maintain the parent-child relationship may lead to what Parrenas and Boris (2010, as cited by Karraker, 2015 p. 13) refer to as the "antithesis of intimacy." Expectations for maintaining communication through the ease afforded by digital media can impinge on

children's or parents' independence. The complicated power dynamics discussed above can and do interfere with satisfaction when using technology for parent-child communications. And although teleconferencing made parent-child visits possible during COVID-19 for those facing separation due to welfare issues, technological and human barriers prevented this alternative to in-person visits from being successful (Goldberg et al., 2021).

Connections, for example, may not always be smooth, and whether due to technology or the actor, complications can arise.

Shin et al. (2021) observe developmental differences reflected in the availability of technology and use by parents and children that affect satisfaction. For young children, technology that is playful, age-appropriate, and encourages creativity can foster engagement by both parent and child. School-age children and their parents have a strong desire to be together, learn more about each other, and feel a sense of warmth and security. Yet designs may not be user- or communication-friendly, and differences in ability and access can create barriers to effective use. For older children (e.g., adolescents), when parents and teens have access to phones and social media, and when a common time for interaction is apparent, communication appears effective. Yet as Dworkin et al. (2019) observe, the paradox of connecting and distancing can make parents' use of social networking and unscheduled calls feel intrusive and like a privacy invasio.

Assets and challenges are apparent for specific populations of parents and children as well. Parents and children attempting to maintain communication through technology across legal separations face particular scrutiny with regard to child privacy and safety (Saini & Pollack, 2018). In a survey with 106 family caseworkers, Saini and Pollack (2018) identified that the majority of legally separated parents and children use technology to maintain communication. This can be quite positive, as they can each keep abreast of the life details of the other and maintain connectedness, particularly when a child is long-distance and living in the other parent's home or in a foster home. Caseworkers also saw it as a way to protect the child from conflict in the parent-to-parent relationship, and enhance the child's feeling of safety. Yet rampant posting on social media diminishes the child's safety, as well as the privacy of the parent who may closely monitor and track the child. As with other cases representing the range of technologies' uses and affordances, the picture is a complex one. Because of this, the caseworkers in Saini and Pollack's study advocates for ICT not as a replacement for parent-child connections, but as a way to enhance communication.

Possible disruption in the relationship: Parents' own technology use

"Communication" by SPIngram is licensed under CC BY-NC-ND 2.0.

As noted above, parents' own technology use is a significant factor in their attitudes about monitoring and mediating children's use, and in shaping and modeling children's technology consumption. Samual's (2017) counter response to the argument that smartphones were destroying a generation (Twenge, 2017) was that smartphones distracted parents, leading them to demonstrate "minimal parenting." McDaniel's (2019) and Kildare and Middlemiss' (2017) reviews of the literature concerning parents' use of technology when with their children paint a third picture of communication in the relationship: that of nonverbal messaging through distracted use. Noting that the majority of research in this area has focused on parents of young children, McDaniel observes the many reasons parents would use their phones with a child present. Not only do they seek information and communicate with others, seek emotional support, or continue work, but their use attempts to relieve the boredom of childrearing. This "**technoference**" (McDaniel's term for the "everyday intrusions and interruptions of devices in our face-to-face interactions") can have potentially serious consequences to the child through the parents' ability to connect and engage and through the child's own observation of the parent's distracted action, and can negatively impact the parent's own emotional state. Parenting outcomes of being distracted by one's phone include reduced verbal and nonverbal interactions with the child, reduced awareness and sensitivity to the child's needs and responses, and reduced coordination and communication in co-parenting. McDaniel, and Kildare and Middlemiss, note that these responses are directly associated with the relational mechanisms in attachment formation, although longitudinal research to date hasn't validated these assumptions.

Additional parenting consequences of being distracted by technology include the difficulty of multitasking between the device and the needs and attention of the child, and time displacement (e.g., focusing on a phone compared to active time with a child). From the child's perspective, they may express dissatisfaction in the time spent with the parent and in turn, feel ignored. Kildare and Middlemiss cite a study in which 32% (of 6,000) children reported feeling unimportant when their parents were distracted by a phone. As the authors of both review articles observe, more research is needed to more definitively understand specific dimensions of parental technology use with children (e.g., how much time is spent on phones when with children, specific activities parents do while on their phones) and impacts on parenting, the relationship, and child development. They also observe that it's not reasonable to expect parents not to engage with technology

when with their children, observing the complex reasons that parents use technology. They advocate for education on appropriate use, and engagement in ways that are healthy for the relationship and for the child. This resource from Zero to Three offers parents ways to focus on their children, not their phones.

"Sharenting"

As discussed in Chapter 6, parents express their caregiver and relational identities online through blogging, posting on social media, and texting ideas and images of the children to others (Blum-Ross & Livingstone, 2017). A challenge can occur in the parent-child relationship when children object to their images and information about themselves being shared, particularly without permission (Saner (2018) refers to this as a "permanent digital tattoo"). While not as overt an expression of distraction by technology use as those discussed above, **"sharenting"** can still send a message to the child that their feelings are not being considered. Blum-Ross and Livingstone (2017) determined that when parents of younger children share images and experiences of their child and childrearing, they may also have misgivings about the archival nature of the internet and the possibility of their posts resurfacing when the child is older. Parents also express a certain element of guilt, part of the complex feelings parents describe, as discovered in Shin et al. (2022)'s review of the literature of parent-child relationships through technological innovation. Parents hold an awareness of the child's aging to the point of awareness and expressing feelings of dissatisfaction with their private information being shared. Blum-Ross and Livingstone share this incident, which directly points to the potential conflict with "sharenting" and the need for parent-child communication to maintain communion:

> Harvey confronted this issue when his 6-year-old son Archie began to express discomfort at appearing on the blog. Harvey described how Archie had begun to ask what the photos Harvey took were for, questioning "is

> this a photo for you, Daddy, or is it a photo for the blog"' Increasingly Archie would refuse to be in pictures, eventually exacting revenge by covertly using Harvey's phone to post an unflattering picture of Harvey eating a sandwich on his dad's Instagram feed. Harvey was working with Archie to help Archie decide what "he wants me to write" so he could be more in control. Yet, finding himself cajoling his son, Harvey described a struggle between respecting his son's boundaries and keeping his commitment to the blog and his readership among the wider blogging community. (Blum-Ross & Livingstone, 2017, p. 116).

Focus on technology-facilitated parent-child relationships in young adulthood

A significant amount of research has examined the role of technology in the parent-child relationship during young adulthood. One conclusion is that the availability and use of ICT is a positive influence on this relationship. A review by Hessel and Dworkin (2018) identified differences in how young adults use technology to communicate with parents, compared with siblings and grandparents. The authors indicated that when children go to college (given that college students are an often sampled group in this research area), there may be a stronger focus on the relationship, and technology has an intentional purpose. While they indicate that the research on persons other than parents is limited, young adults appear to use a variety of methods to maintain relationships with parents through technology, including adding parents as "friend"' on social media, texting, and sending email (though the Hessel and Dworkin review and McCurdy et al.'s 2022 research with college students validates that email use has declined). Purposes include utility (sharing, asking for help), immediacy, and emotional connections. Relationship quality appears to be positive, as demonstrated by emerging adults' reports of satisfaction, feelings of intimacy, and the number of types of media used for communication.

As an example, Vaterlaus et al. (2019), surveyed 766 young adults and adolescents (just over 10% of the sample) and their parents on their use of technology together and on the notions of quantity and quality time spent. Not surprisingly (given that the young adults were away and in college), teens reported spending more time with their parents. Among the whole sample, there was a clear perceptual difference between quantity time and quality time. Young adults still sought and identified having quality time with parents. Type of media was differentiated when considering connectivity: synchronous media such as telephone calls, video chat, and texting facilitated quality interactions; fewer young adults reported using email, social networking, and texting for quality

Young adults' reports of using computer-mediated communication with parents (particularly text messaging when it came to both mothers and fathers) were significantly associated with feelings of closeness, togetherness, and connection in their time spent with the parent.

interactions. And young adults' reports of using computer-mediated communication with parents (particularly text messaging when it came to both mothers and fathers) were significantly associated with feelings of closeness, togetherness, and connection in their time spent with the parent. The authors observe the role that technology can play in maintaining quality relationships between parents and teens, and acknowledge the challenges brought about through an individual being distracted by media when in the presence of the other. They recommend additional research and educational efforts on the benefits of using technology together in ways that foster and facilitate relationships.

Yet Hessel and Dworkin indicate that a dominant theme in the literature indicates potential challenges with autonomy, or rather the lack thereof. Frequency of contact with parents and parental over-involvement related to lower feelings of autonomy, whereas those with a strong parent-child relationship reported higher levels of autonomy. They also observe that, as noted in Chapter 5, there are differences by generational cohort, as research with college students just two years apart indicates differences in email and social networking behavior with parents.

"Facetime with the parents!" by christopher.berry is licensed under CC BY-NC-SA 2.0.

McCurdy et al. (2022) also point to differences in communication behavior and perceived young adult/parent relationships. In interviews with 44 college students, those who used a rich communication repertoire for connection with their parents reported more closeness. Citing media multiplexity theory, the authors identified that students perceived stronger relationships due to multiple technologies affording more contact frequency, more ways to make connection, and a stronger parental social presence. Interestingly, young adults also were strategic about differentials in technology competence and access by their parents to maintain boundaries. Knowing what skills their parents had, and which applications they did and didn't use, worked to their advantage as ways to find necessary separation for their individuation. From Miller-Ott et al.'s (2014) research, frequent texting, establishing rules around availability, repetitive contact, and relational arguments were more direct strategies for healthy individuation with connectedness.

Research also suggests new opportunities for connecting with parents: gaming, social media, video creation, even family genealogy applications. Given the range of potential technologies for interaction and differentials in access and use together, Hessel and Dworkin (2018, p. 369) wisely observe,

> Rather than building research around specific technology, such as Facebook, categorizing technology options by context will produce findings that are more transferable and durable. Using theoretical foundations such as

Media Richness Theory may help to identify which technology choices complement which types of communication between which family members for what purpose.

Conclusion

This chapter reveals complexities in the notion of the parent-child relationship and technology. Most families don't perceive conflict, though when the focus of research, perception may be skewed depending on who is being interviewed. Positively, many children and parents manage negotiations around children's healthy technology use, and parents practice active or other types of mediation that encourage children's positive use. There isn't a need for practices that are restrictive or punitive. Active mediation strategies align with a life-course model of relationships and developmental growth that balances a respect for each individual's ability for agency and for the communion of the relationship.

many children and parents constructively negotiate healthy technology use, and parents practice active or other types of mediation that are encouraging and maintain trust and communication in the relationship

The chapter also examined the many factors that can influence the ways parents' mediate, which can contribute to conflict or to the lack thereof. Key within these is the generational difference in parents' own knowledge and use of technology. When children grow up knowing more, and "reverse mediation" occurs, the power dynamic can shift. In some homes, this can be sensitive. The dynamic shifts as well when parents' technology use leads to their being distracted from their children. This sends a strong non-verbal message about the importance of the relationship, and can have damaging effects on parenting, on the relationship, and consequently on child development. As technology continues to evolve, and as generations of children and parents change in their knowledge, skills, comfort, and expectations about using technology individually and with each other, the clear message for both parents and children is one of intentionality.

As technology continues to evolve, and as generations of children and parents change in their knowledge, skills, comfort, and expectations about using technology individually and with each other, the clear message for both parents and children is one of intentionality.

Shin et al. (2021) advocate for a life-course perspective in the future design of technology to promote the parent-child relationship:

> Technology design that supports relationships must be responsive to the dynamic environment and transactional nature of relationships; accordingly, designers should be aware of technology's role, and find ways to provide users with timely suggestions. The family life course development approach provides a theoretical lens by which design can incorporate a family's transactional nature. The theory's central assumption is that the family's developmental process is inevitable, and that individuals' lives change dynamically over time. It further explains how the lives of individual family members, such as parents and children, are interconnected, and how families transmit their assets and disadvantages to the next generation. [p.441:22]

For parents, technology visionary and parent danah boyd suggests approaching technology with an attitude of flexibility (Tippet, 2017):

> From my perspective, it's about stepping back and not assuming that just the technology is transformative, and saying, okay, what are we trying to achieve here? What does balance look like? What does happiness look like? What does success look like? What are these core tenets or values that we're aiming for, and how do we achieve them holistically across our lives? And certainly, when parents are navigating this, I think one of the difficulties is to recognize that this is what your values are, and they may be different from your child's values. And so how do you learn to sit and have a conversation of "Here's what I want for you. What do you want? And how do we balance that?" And that's that negotiation that's really hard. And so I think about it in terms of all of us — how do you find your own sense of grounding?

7.2 REFERENCES

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In Action control (pp. 11-39). Springer Berlin Heidelberg.

Aloia, L. S., & Warren, R. (2019). Quality parent–child relationships: The role of parenting style and online relational maintenance behaviors. *Communication Reports*, 32(2), 43-56.

Auxier, B., Anderson, M., Perrin, A., and Turner, E. (2020, July 28). Parenting Kids in the Age of Screens. Pew Internet and American Life. https://www.pewresearch.org/internet/2020/07/28/parenting-children-in-the-age-of-screens/

Baumrind, D. (1971). Current patterns of parental authority. *Developmental Psychology*, 4, 1–103. doi:10.1037/h0030372

Blackwell, E., Gardiner, and Schoenebeck, S. (2016). Managing expectations: Technology tensions among parents and teens. CSCW '16, San Francisco, CA.

Blum-Ross, A., Donoso, V., Dinh, T., Mascheroni, G., O'Neill, B., Riesmeyer, C., and Stoilova, M. (2018). Looking forward: Technological and social change in the lives of European children and young people. Report for the ICT Coalition for Children Online. Brussels: ICT Coalition.

Blum-Ross, A. and Livingstone, S. (2017). "Sharenting," parent blogging, and the boundaries of the digital self. POPULAR COMMUNICATION. VOL. 15, NO. 2, 110–125 http://dx.doi.org/10.1080/15405702.2016.1223300

Bornstein, M. H. (2012). Cultural approaches to parenting. *Parenting*, *12*(2-3), 212-221.

Brito, R., Francisco, R., Dias, P., and Chaudron, S. (2017). Family dynamics in digital homes: The role played by parental mediation in young children's digital practices around 14 European countries. *Contemporary Family Therapy,* 39(4), 271-280.

Bumpass and Werner Matthew F. Bumpus & Nicole E. Werner (2009) Maternal Rule-Setting for Children's Internet Use, Marriage & Family Review, 45:6-8, 845-865, DOI: 10.1080/01494920903224442

Carter, S. P., and Renshaw, K. D. (2016). Spousal communication during military deployments: A review. *Journal of Family Issues,* 37(16), 2309-2332.

Casimiro, C., and Nico, M. (2018). From object to instrument: Technologies as tools for family relations and family research. In Casimiro C. and Neves B. (Eds.), Connecting Families: Information and Communication Technologies, generations, and the life course (pp. 133- 156). Bristol: Bristol University Press. doi:10.2307/j.ctv2867xm.14

CommonsenseMedia (2016). The Commonsense Census: Plugged-in Parents of Tweens and Teens, Commonsense Media. Retrieved from https://www.commonsensemedia.org/research/the-common-sense-census-plugged-in-parents-of-tweens-and-teens-2016

Connell, S. L., Lauricella, A. R., & Wartella, E. (2015). Parental co-use of media technology with their young children in the USA. *Journal of Children and Media*, 9(1), 5-21.

Correa, T. (2014). Bottom-up technology transmission within families: Exploring how youths influence their parents' digital media use with dyadic data. *Journal of Communication,* 64, 103–124

Coyne, S. M., Radesky, J., Collier, K. M., Gentile, D. A., Ruh Linder, J., Nathanson, A. I., Rasmussen, E. E., Reich, S. M., and Rogers, J. (2017). Parenting and digital media. *Pediatrics*, 140, s112–s116. doi:10.1542/peds.2016-1758N

Darling, N., & Steinberg, L. (2017). Parenting style as context: An integrative model. In Interpersonal development (pp. 161-170). Routledge.

Darling, N., & Steinberg, L. (1993). Parenting style as context: An integrative model. *Psychological Bulletin*, 11, 487–496. https://doi.org/10.1037/0033-2909.113.3.487

Dworkin, J., Hessel, H. and LeBoeuf, S. (2019). The Use of Communication Technology in the Context of Adolescent and Family Development: An Integration of Family and Media Theories. *Journal of Family Theory and Review*, 11: 510–523 DOI:10.1111/jftr.12350

Eisenberg, A. R. (1992). Conflicts between mothers and their young children. *Merrill-Palmer Quarterly,* 38, 21–43

Ferreira, E., Ponte, C., & Castro, T. S. (2017, November). ICT and gender: Parental mediation strategies. In 2017 International Symposium on Computers in Education (SIIE) (pp. 1-6). IEEE.

Flores, D., & Barroso, J. (2017). 21st century parent–child sex communication in the United States: A process review. *The Journal of Sex Research*, 54(4-5), 532-548.

Ganong, L. H., Coleman, M., Feistman, R., Jamison, T. and Markham, M. S. (2012) Communication technology and postdivorce coparenting, *Family Relations*, 61(3): 397–409, https://doi.org/10.1111/j.1741-3729.2012.00706.x

Goldberg, A. E., Brodzinsky, D., Singer, J., & Crozier, P. (2021). The impact of COVID-19 on child welfare-involved families: Implications for parent–child reunification and child welfare professionals. *Developmental Child Welfare,* 3(3), 203-224.

Harach, L. D., & Kuczynski, L. J. (2005). Construction and maintenance of parent–child relationships: Bidirectional contributions from the perspective of parents. *Infant and Child Development: An International Journal of Research and Practice*, *14*(4), 327-343.

Heck, S. A., & Pincus, A. L. (2001). Agency and communion in the structure of parental representations. *Journal of Personality Assessment*, 76(1), 180-184.

Helsper, E.J., Kalmus, V., Hasebrink, U., Sagvari, B. and de Haan, J. (2013) Country classification: Opportunities, risks, harm and parental mediation. London: EU Kids Online, LSE

Hessel, H., & Dworkin, J. (2018). Emerging adults' use of communication technology with family members: A systematic review. *Adolescent Research Review,* 3(3), 357-373

Jarvenpaa, S., & Lang, K. (2005). Managing the paradoxes of mobile technology. *Information Systems Management*, 22(4), 7–23. https://doi.org/10.1201/1078.10580530/45520.22.4.20050901/90026.2

Karraker, M. (2015). Global families in a digital age. In C. Breuss. (Ed.) Families in a Digital World. NY: Peter Lang., 55-75.

Katz, V. S. (2010). How children of immigrants use media to connect their families to the community. *Journal of Children and Media*, 4, 298–315

Kiesler, S., Zdaniuk, B., Lundmark, V., & Kraut, R. (2000). Troubles with the internet: The dynamics of help at home. *Human-Computer Interaction*, 15, 323–351

Lanigan, J. D. (2009). A Sociotechnological Model for Family Research and Intervention: How Information and Communication Technologies Affect Family Life. *Marriage & Family Review*, 45(6-8), 587–609. doi:10.1080/01494920903224194

Livingstone, S., Mascheroni, G., Dreier, M., Chaudron, S., and Lagae, K. (2015). How Parents of Young Children Manage Digital Devices at Home: The Role of Income, Education and Parental Style. London: EU Kids Online.

Livingstone, S. (2009). Youthful experts. In S. Livingstone (Ed.), Children and the internet (pp. 33– 62). Malden, MA: Polity Press.

McCurdy, A. L., Benito-Gomez, M., Lee, G. Y., & Fletcher, A. C. (2022). College Students' Perceptions of

Communication Technology Use and Parent–Child Relationships. *Emerging Adulthood*, 21676968211060954.

McDaniel, B. T. (2019). Parent distraction with phones, reasons for use, and impacts on parenting and child outcomes: A review of the emerging research. *Human Behavior and Emerging Technologies*, 1(2), 72–80. https://doi.org/10.1002/hbe2.139

Miller-Ott, A. E., Kelly, L., & Duran, R. L. (2014). Cell phone usage expectations, closeness, and relationship satisfaction between parents and their emerging adults in college. *Emerging Adulthood,* 2(4), 313–323. https://doi.org/10.1177/ 2167696814550195

Naab, Thorsten (2018). From Media Trusteeship to Parental Mediation. The Parental Development of Parental Mediation in Giovanna Mascheroni, Cristina Ponte & Ana Jorge (eds.) Digital Parenting. The Challenges for Families in the Digital Age. Göteborg: Nordicom. (p. 93-102)

Navarro, J. and Tudge, J. (2022). Technologizing bronfenbrenner: neo-ecological theory. *Current Psychology*, 1-17. doi.org/10.1007/s12144-022-02738-3

Nelissen, S. and Van den Bulck, J. (2017): When digital natives instruct digital immigrants: active guidance of parental media use by children and conflict in the family. *Information, Communication & Society*, DOI: 10.1080/1369118X.2017.1281993

Nikken, P., & Opree, S. J. (2018). Guiding young children's digital media use: SES-differences in mediation concerns and competence. *Journal of Child and Family Studies*, 27(6), 1844-1857.

Odgers, C. (2018). Smartphones are bad for some teens, not all. *Nature* 554, 432-434 (2018) doi: https://doi.org/10.1038/d41586-018-02109-8 https://www.nature.com/articles/d41586-018-02109-8

Page, Jeffery C. (2021). "It's really difficult. We've only got each other to talk to." Monitoring, mediation, and good parenting in Australia in the digital age. *Journal of Children and Media*, 15(2), 202-217.

Ramsey, M. A., Gentzler, A. L., Morey, J. N., Oberhauser, A. M., & Westerman, D. (2013). College students' use of communication technology with parents: Comparisons between two cohorts in 2009 and 2011. *Cyberpsychology, Behavior and Social Networking*, 16(10), 747–752. https://doi.org/10.1089/cyber.2012.0534.

Rudi, J. H., & Dworkin, J. (2018). Parents' and youths' solicitation and disclosure of information in today's digital age. *Journal of Youth Development*, 13(4), 5-28.

Saini, M., & Polak, S. (2018). The Benefits, Drawbacks, and Safety Considerations in Digital Parent–Child

Relationships: An Exploratory Survey of the Views of Legal and Mental Health Professionals in Family Law. *Family Court Review*, 56(4), 597-606.

Samual, A., (2017). Yes, smartphones are destroying a generation, but not of kids. *The Digital Voyage*. August 8. https://daily.jstor.org/yes-smartphones-are-destroying-a-generation-but-not-of-kids/?mc_key=00Qi000001X2OYEEA3.

Shin, J. Y., Rheu, M., Huh-Yoo, J., & Peng, W. (2021). Designing technologies to support parent-child relationships: a review of current findings and suggestions for future directions. Proceedings of the ACM on Human-Computer Interaction, 5 (CSCW2), 1-31.

Smetana, J. G. (2017). Current research on parenting styles, dimensions, and beliefs. *Current Opinion in Psychology*, 15, 19-25.

Tippet, K. (Host). (2017, July). Danah boyd. The internet of the good the bad and the ugly. In On Being. American Public Media. https://onbeing.org/programs/danah-boyd-the-internet-of-the-good-the-bad-and-the-ugly-jul2017/#transcript

Twenge, J. (2017, September). Have Smartphones destroyed a generation? *The Atlantic*. https://www.theatlantic.com/magazine/archive/2017/09/has-the-smartphone-destroyed-a-generation/534198/

Vaterlaus, J. M., Beckert, T. E., & Schmitt-Wilson, S. (2019). Parent-child time together: The role of interactive technology with adolescent and young adult children. *Journal of Family Issues*, 40(15), 2179-2202

Wartella, E., Rideout, V., Lauricella, A. R., and Connell, S. (2013). Parenting in the age of digital technology. Report for the center on media and Human development school of communication Northwestern University.

Wiggins, J. S. (1991). Agency and communion as conceptual coordinates for the understanding and measurement of interpersonal behavior. In D. Cicchetti & W. M. Grove (Eds.), Thinking clearly about psychology: Essays in honor of Paul E. Meehl, Vol. 1. Matters of public interest; Vol. 2. Personality and psychopathology (pp. 89–113). University of Minnesota

7.3 LEARNING ACTIVITIES

Reflecting on the parent-child relationship and technology

Recall when you began to be active with technology — when you got your first smartphone, perhaps, when you became active on social media, when your homework and school projects began taking up more time online, and/or when you started using technology for entertainment, perhaps playing videogames and/or streaming media. Now reflect on your parents' reaction to your use (and possibly that of your siblings). Consider Wiggin's intersection of agency and communion for two people in a relationship. Identify a key discussion or negotiation you had around your technology use. Where would you place yourself? Your parent?

The many influences on parental mediation

Interview one or both of your parents (or the people in your life who actively parented you during middle school and high school). Create a list of questions about the ways in which they mediated your technology use. Were they active and engaged? Were they restrictive? Were they permissive? Talk to your parents about why they mediated technology in your household the way they did. Ask them about their memories of those years and their interactions with you. What influenced their actions? Do they have any regrets? Do they feel successful? If they were to make three recommendations to parents of 10–14 year olds about parental involvement in children's technology use and maintaining a positive relationship, what would they be?

Fathers take to the internet ("sharenting")

In these two videos, fathers take to the internet asserting their roles as parents. In one case, the father (Tommy) is addressing his daughter's behavior publicly; in the other, the father (Brad) is advocating on behalf of his daughter. Both videos, when posted, went viral.

Tommy:

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://open.lib.umn.edu/technologyfamily/?p=422#oembed-1

- Brad:

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://open.lib.umn.edu/technologyfamily/?p=422#oembed-2

View both and answer the questions below. These questions help identify the father's motivations for using the virtual world as a sounding board for his frustrations, the possible consequences or benefits of his actions, and the potential impacts on the father-daughter relationship. Provide recommendations on how to handle the situation the fathers faced to provide a (more) peaceful/positive resolution that maintains the relationship and respects the roles of both the fathers and the daughters.

1. What is the father concerned about? What is the father's motivation for taking his concern to the Internet?
2. What does the father hope to accomplish? How is it related to his role as a parent? Does the father demonstrate a balance/imbalance of warmth and demandingness? What do you see in his demonstration of agency vs. communion?
3. What would the father's action do to impact his daughter's well-being? Why? (How would

his daughter feel when she learned about this video)?
4. How (if at all) do you see the father's response as reflecting the daughter's age (approximately 12–14 years)?
5. What would the father's action do to impact the father-daughter relationship? Why?
6. Would you recommend that the father take a different tact? If so, what? If not, why is this the appropriate response?

Considering questions for technology design to promote parent-child relationships

At the conclusion of Shin et al.'s (2021, 441:25) review of the literature on technology and parent-child relationships, they pose a variety of questions for future research. Consider each or one of these questions alone or with another person or in a small group. You might want to pose these questions to your friends and family, particularly your parent(s), and get their take on future design considerations.

1. How can technology empower children to initiate conversation and interaction with parents in families living together? If technology is designed with novel accessible functions and forms that can empower children to initiate interactions with their parents, can these functions help children's perception of family belonging?
2. How can technology create communication topics (triggers) through shared activities?
3. How can technology effectively support households with children who have a wider age gap (e.g., 3 and 12 years old)?
4. How can technology support a parent-child dyad's different expectations and needs in communicating with each other? Is synchronous communication always suitable for the target dyad? Younger children tend to be more engaged with their parents, while adolescent and older children take their privacy and me-time more seriously.
5. What are the other family members' preferences about privacy? While the target dyad might feel favorable toward, for instance, always-on technologies, this may be uncomfortable for others who are not close enough to share details of their lives.
6. How can technology support the constantly changing relationship between parents and

children throughout developmental stages and life courses? Designs that support a relationship should also be able to dynamically change when the relationship does.

7. How can technologies support parent-child interactions, instead of serving as a replacement for them?

Parent learning about mediating children's technology use (in ways that promote the parent-child relationship)

There are many guides for parents about protecting their children online. Identify hypothetical children in a hypothetical family and identify some online resources. Keep an eye to both the development of the child (what are they using, technology-wise? What do they understand, rule-wise?) and the context and culture of the family that might influence the ways in which the parent attempts to mediate the child's use. Compare sources of advice. Which would you find most helpful and recommend to parents?

7.4 BLOG PROMPTS

Read the article: "Yes, Smartphones are destroying a generation, but not of kids." Reflect on information in the chapter about parents' use of technology, and on our discussion of the Millennial generation of parent users who may unconsciously be swept up with unintentional over-use or, to the contrary, a heightened awareness of technology's seductive powers. Do you agree with this perspective on our attention to parents as technology users?

Select one of the two videos highlighted in the Learning Activities for this chapter. Relate the father's actions in that video to what was discussed in the chapter about parenting and parent-child relationships. Do you believe that the father's actions were right? Wrong? Why? Why not? How might you respond were you the same parent in the same situation?

Technology can introduce a shift in the balance of power in parent-child relationships. A teenager may be more familiar with how to use apps and devices than his or her parent. This can lead to the teen feeling they have the upper hand and the ability to work around whatever rules the parent has set forward. And it can lead to the parent responding to the unfamiliar power shift with underconfidence or an over-assertion of authority (e.g., making tougher restrictions elsewhere). What are your thoughts about this possible power shift in families due to comfort differences with technology? Is this something you or others you know have experienced? How might you aid a family who is facing this dilemma?

In this Wired magazine article, Jaclyn Greenberg writes about feeling more connected to her adolescent daughter when they learned a language together via an app. After reading the article,

provide a reflection on her experiences from your own perspective. How might this have felt for the teenager? What are your own experiences in sharing a technology with a parent? Perhaps an app like Duolingo or a game that involves the two of you in the same goal? How might it strengthen the parent-child relationship? Are there elements of the experience that might play out Wiggins' agency and communion dynamic for both members?

7.5 ADDITIONAL RESOURCES & READINGS

Books

- Livingstone, S. M., & Blum-Ross, A. (2020). Parenting for a digital future how hopes and fears about technology shape children's lives. Oxford University Press. Parenting for a Digital Future
- Heath, P. (2018). Parent – Adolescent Interactions. In Parent-Child Relations: Context, Research, and Application, 4th Edition. Pearson.

Website Articles for/About Families

- The Atlantic: You Can Set Screen-Time Rules That Don't Ruin Your Kids' Lives: https://www.theatlantic.com/education/archive/2021/02/homeroom-how-do-i-enforce-screen-time-rules-now/617858/
- Perspectives: Emerging Research – Listening to Parent Voices: How Technology Is changing What Is Possible in Relationship-Based Services
- Getting the Most Out of Screen Time: The PBS KIDS Approach to Learning Through Media
- Zero to Three:
  - Navigating Screen and Media Use During a Pandemic and Beyond
  - 5 Parent Tips for Putting Smartphones in Their Place (Zero to Three)
- Commonsense Media:
  - Parenting, Media and Everything In between:
    - Advertising to Kids
    - Screen Time
    - Online Safety
- Clique Click (2019) Bringing up Children in the Digital Age (Singapore)
- Digital guidelines: Promoting healthy technology use for children
- Kids & Tech: Tips for Parents in the Digital Age
- Parents of Young Kids: Put Down Your Smartphones
- Is It Possible to Use Technology to Actually Enhance Relationships? Absolutely!
- Screens and Parenting: Managing "Technoference" in a Digital World
- Screen-Use Tips for Parents of Children Under Three
- The Role Of Relationships in Children's Use of Technology (NAEYC)

- New York Times: Caron, C. (2021). Worried About Your Teen on Social Media? Here's How to Help. https://www.nytimes.com/2021/09/21/well/family/teens-social-media-help.html

Sharenting

- Opinion: The One Question Parents Should Ask Themselves Before Posting Their Kids on Social Media
- On Parenting: My daughter asked me to stop writing about motherhood. Here's why I can't do that.
- Family: That Outrageous Mommy Blogger Who Refuses to Stop Writing About Her Kid Highlights a Key Parent-Child Generational Gap

CHAPTER 8: TECHNOLOGY USE FOR FAMILY COMMUNICATION AND CONNECTIVITY

8.1 TECHNOLOGY USE FOR FAMILY COMMUNICATION AND CONNECTIVITY

I know it is wet and the sun is not sunny, but we can have lots of good fun that is funny.

—— Dr. Seuss

Chapter Insights

- Many ICTs (applications such as WhatsApp, FaceTime, Zoom, Email, texting, messaging, and Instagram) play a role in family communication and feelings of connectedness. Yet there may be challenges these applications introduce to effective family communication.
- Early research on family communication and technology revealed the value of interactive technologies and feelings of connectedness. Still there are differences in effectiveness depending on family membership.
- Videogames offer a number of benefits and challenge to family connectedness.
- The concept of connected learning values relationships when the individual explores interests using technology. Parents can function as "learning hero" and facilitate children's learning beyond the classroom.
- Families can create technology together. An example offered in the chapter is that of a father and his two children who do an almost-weekly podcast. Consider ways that engaging with children around technology creation can strengthen family closeness/cohesion and demonstrate flexibility. Such an activity can also contribute to individual family members' development.
- Key to family joint technology use is the set of rules families establish together about when and how technology is used. These rules include when family members are together, in the

household. Consider the values and norms that families create for day-to-day functioning and the well-being of their members. ICT use is an extension of those values. Members' use can also be a disruption of those values in ways that call for conflict resolution.

- After reading this chapter, identify what you feel inspired by, the questions that remain for you, and the steps you can take for your own technology use to be more intentional.

Introduction

"Family video time" by iceplee is licensed under CC BY-NC-ND 2.0.

We've previously discussed technology use within the family and across families. In this chapter, we examine more specific ways in which families use technology as families. We'll look, for example, at the role that technologies like FaceTime and Zoom play in family communication and feelings of cohesiveness, for example, and at how specific technologies like videogames and streaming media content are used for joint entertainment through co-viewing and interactive participation, contributing to feelings of cohesiveness and familiarity, and encouraging shared interests. Participation with children in these activities offers numerous benefits for parenting as well, and impacts children's development. And during COVID, communication, interactive, and creative technologies meant ways for families to stay together, play together, cope with the strain of isolation, and find deeper means for satisfaction.

As a quick review, we looked at the family as a system open to external and internal forces. As the whole of the system is dependent on the interactivity and full functioning of all family members, technology was viewed as an influence external to the family, on individuals and subsystems in the family (e.g., a parent and child), and on all family members jointly. The family structure includes an understanding of the roles played by individuals within it.

We also examined how differences in technology use within the family illustrate the flexibility needed to embrace members' own preferences and needs. Whole family differences helped convey how family units are subject to wider ecological system resource availability and constraints that can affect technology and internet

access, values for use, norms and behaviors, and achievements. Limited access can also affect the voice and presence families have in social and political discourse.

Technology use by families and family members is measured by practical indicators, including:

- Device **ownership** (which, how many, which model, how many different).
- **How** devices are used and for what purposes.
- Device or application **frequency** (e.g., minutes per day, hours per day, days, interaction events).
- Whether device use is **individual** or **shared.**
- Whether device or application **behavior** is problematic — e.g., addiction, being a tech luddite.
- How members use tech by device, application, function, and their attitudes and skill differences. Variations by member use; factors such as age, employment, and attitudes that influence these variations.

These dimensions are important to keep in mind as we explore use by families as a whole, or by subsystems within the immediate and extended family, along with family-level outcomes.

Research on Family Technology Use, Communication, and Connectedness.

"Talking with the family in Ohio" by petyr.rahl is licensed under CC BY-NC-SA 2.0.

Researchers of family dynamics and communications technology/media hold that the use of devices and particular means and applications impacts the meaning that family members give to their interactions, and creates shared realities. In turn, these shared realities deepen the sense of family norms, values, and feelings of connectedness. When used constructively — and with an awareness of potential conflict that can arise between family members due to differences in comfort, skill, and perception of technology — media can thus be beneficial in strengthening the bonds that create the sense of family.

Early research by Padilla-Walker et al. (2012) examined types of technologies used by families (specifically parents and their adolescent children) and those more strongly related to families' feelings of connectedness. As previously discussed, connectedness is a warm, loving, positive relationship between parents and child/family members. Connectedness was measured using the five items of the warmth/support subscale of the Parenting Styles and Dimensions Questionnaire-Short Version (PSDQ; Robinson et al., 2001; e.g., "I have warm and loving times together with my child/my parent." Each item was measured on a 5-point Likert scale.

Cell phones, videogames, and co-viewing media showed the most significant and positive relationship to family connectedness. Email and social networking did not indicate strength related to the outcome variable. The authors determined differences by family characteristics: parents with a higher level of education reported more connectedness related to technology use.

The authors posited that co-viewing of media indicated shared interests and fostered shared communication, and that if parents and children agree on media viewed together, each may have a better understanding of the other, which can facilitate shared discussion during or after the program. These findings relate to those of Nathanson (2002), who earlier identified the role that co-viewing media had on parents' ability to mediate content and children's exposure. While a smaller portion of teens reported playing videogames with their parents, co-playing was related to the level of family connection. And as mentioned in the previous chapter, children and parents interacting together with media, and children teaching parents how to use various media and technology, bring the potential to both reduce the digital divide and increase a sense of family connectedness.

children and parents interacting together with media, and children teaching parents how to use various media and technology, bring the potential to both reduce the digital divide and increase a sense of family connectedness

Email and social media. In the Padilla-Walker et al. study (2012), email and social networking were not related to connectedness. Email offers asynchronous communication, which may seem less personal, and more like communication that just carries news and information, particularly as more immediate methods of texting and private messaging are available. In the author's own collaborative research with over 1,500 families around the same time (2011), we determined that type of technology varied by family member. Email and social networking are particularly popular with extended family, while texting — a more intimate form of communication — was more likely to be used with one's children and the other parent (Rudi et al., 2014). Since the time the study was conducted, there has been little substantive change in how email is used or perceived among family members.

Social media, in contrast, has greatly expanded in terms of perception, use, and variety of applications. The 2012 research by Padilla-Walker et al. reported minimal interaction between parents and teens on social media, citing limitations in personal expression (e.g., Twitter's 140 character limit) and the perception that using social media was only between friends. More recent research, however, indicates that aspects of social media can strengthen family connectedness. A 2022 review of the literature by Tariq et al. identified 14 articles on social media use and family relationships/family connectedness. As with the Padilla-Walker et al. (2012) study, the majority of articles focus on parents and adolescent use. Connectedness is related in part to the dynamics of the parent-child relationship; adolescents or young adults, for example, may feel their privacy

is at stake when parents "friend" them on social media. Stronger outcomes related to connectedness were determined in studies that focused beyond parents, and on integrated connections with siblings and extended family (e.g., feeling closer by having another outlet for sharing information). Yet the authors note that the literature is sorely limited, with the majority of focus on teenagers and young adults rather than whole families, and observe that questions rarely address the motivations for family members' joining social media or how social media use relates to connectedness.

Also limited in the research is the range of types of social media applications, with a strong preference given for Facebook. Tariq et al. (2012) observe a study (Nouwens et al., 2017) that highlights adults' variation of application use depending on the contacts and users in that application. In other words, parents use of a platform like Instagram or TikTok would depend on whether their child uses it, or they know other people on it.

Even earlier research by Stern and Messer (2009) looked at means for connection with relatives: email and cellphones were used to communicate with more distant relatives; face-to-face visits were used more locally. When considering measures of closeness, the authors concluded that **frequency of contact** may not be the best indicator of closeness. Rather, people select the method and behavior for staying in touch with others that relate to the level of closeness desired. In other words, "people use the technologies available to them **to fill the niches** in which they believe they are most useful." (p. 671). As we've come to understand the capacities of technologies and differences in individual comfort, skill, and access, we see that technology used for communication in families can be based on **factors that complement emotional closeness and proximity.**

Since 2012, and especially since the COVID-19 pandemic, new technology has evolved for family communication: videoconferencing. Through applications like FaceTime, Skype, and Zoom, videoconferencing enables real-time communication that is more complete (or "media rich") than voice- or text-only communication. As Lebow (2020) observes,

Currently, the literature is limited in helping us better understand family connectedness and social media. So, construct your own hypotheses based on your observations and experiences. If connectedness is defined as "*a warm, loving, positive relationship between parents and child/family members*," how might connectedness occur between you and your mother via social media use? with your father/other parent? Does it differ by parent? How about using social media with your siblings? Or Grandparents? Do you use different applications with different people in your family? How do factors such as frequency of use, the content exchanged, and the features of the social media matter (e.g., direct messaging vs. posting text vs. videoposts)? If you were to design a

social science research will, over time, unveil the values and costs of depending on videoconferencing for family communication during COVID, as families experienced significant loss, strain, and attempts to maintain family rituals and celebrations. Other variables on family functioning during COVID related to reliance on virtual technologies for communication, include accommodating disparities in technology access and skill, and the systemic impacts of supporting family members who face the additional strain of factors related to mental or behavioral health (e.g., access to AA meetings).

> study examining the role of social media in family connectedness, what would your research look like?

Family Variation in Communication and Connectedness via Technology

Karraker (2015) identifies how the use of technology for communication can help families "transcend spatial limitations and provide for identity and cultural renewal" (p. 60). Families who may depend on technology to maintain relational communication and the flow of information include transnational families, divorced/noncustodial families seeking connection and coordination, military families during deployment, and commuter parents. Forging social connectedness in new locations can be a critical lifeline for migrating families (Farbenblum, et al, 2018; McAuliffe, 2021).

This video depicts a military family whose members rely on videoconferencing technology to stay in touch. The father is deployed, and his wife and school-age children connect to share each other's days. The clip promotes a positive association with the family staying in touch during deployment. Similarly, we can consider connections with extended family — particularly grandparents — through videoconferencing and other communication forms such as email, social media, and collaborative tools. During COVID-19, especially, families relied on virtual visits when members couldn't travel and/or were in quarantine (Rose et al., 2021). Some families found improved communication and connectivity with young adults; others held nightly family dinner times virtually so all family members could stay connected (Joyce & McCarthy, 2021). Voida and Greenberg (2012) suggest that playing videogames across generations improves the opportunities for the sharing of activities and experiences, thus improving family relationships.

Yet consider some of the possible consequences or downsides of relying on technology for continued communication. When we experience the lack of physical touch, smell, and sound, Karraker (2015) asks, how much is it really like being there? Over time, does it become easier to meet virtually, eventually bringing about disruption? She notes, "While technology can enable families to reduce the strain spatial distance places on intimacy, technology may also be the 'antithesis of intimacy' (Parrenas & Boris, 2010, p. 13). Most likely, as

with every social change confronted by the family, technology will sometimes enhance long-distance intimacy for global families and will sometimes diminish it, while certainly changing the dynamics of global families in a digital age." (Karraker, 2015, p. 69).

Videogames and Co-viewing Media

Playing videogames as a family or a family subset, such as a parent and a child, can be a marvelous way for technology to build closeness and cohesion. While research supports the benefits for children's physical development (through using handheld devices or activities with Wii), learning, and social and psychological well-being, and has identified possible challenges through contributions to anti-social and aggressive behavior, research has also explored the impact on family time together, satisfaction and coping. Engaged Family Gaming is a site promoting the benefits of gaming together and providing resources for parents.

During COVID-19, did you use videoconferencing to connect with family members who weren't in your household, or with friends? How was it different than seeing them in person, if at all?

An annual report by the Entertainment Software Association (ESA, 2022) provides statistics on who games and on the benefits of gaming. It indicates that 66% of Americans play videogames, including ¾ of those over the age of 18, and with numbers fairly evenly divide between males (52%) and females. The majority (69%) of families in the U.S. have at least one member who plays videogames.

"Top Ten Animal Crossing Villagers" by AntMan3001 is licensed under CC BY-SA 2.0.

In Chapter 6, we discussed the roles and functions that parents have in parenting; in Chapter 7 we looked further into parents' roles in mediating and moderating their children's technology safety and use. Here we focus on joint consideration when family members interact with one another when playing videogames or co-viewing media. When her daughter was about 8, the author played Nancy Drew Mystery games alongside her. The games were sold on DVDs at the time (downloads came later), and formatted for a PC. The games were challenging and filled with depth of information on specific content, as each game had a theme (e.g., history museum, aquarium, Egypt exhibit). To solve the mystery meant solving any variety of puzzles, using keen eye-hand coordination, and employing memory of clues. They could take days to solve. Consider all the ways in which playing Nancy Drew with her 8-year-old enabled the author to fulfill her role as a parent[1].

In their 2022 report on videogames, the ESA observes reasons why parents play videogames with their children.

1. It's fun for all of us.
2. It's a good opportunity to socialize with my child.
3. My child asks me to.
4. I enjoy playing videogames as much as my child.

For example, 90% of parents are present when their child acquires a videogame. And 9 out of 10 require their children to ask permission before purchasing a game. Nearly all (94%) parents pay attention to the videogame played by their children. Three-quarters (77%) report playing videogames with their child at least once a week — up from 55% in 2020.

Over two-thirds (71%) note that playing videogames has a positive impact on their child. And even more (88–91%) agree that they help children learn collaboration and problem-solving skills. With regard to connectivity, most people (83%) play with others ,with 56% playing with friends, 35% with a partner or spouse, and 32% with other family members.

1. While both are 20 years older, they still play alone and together

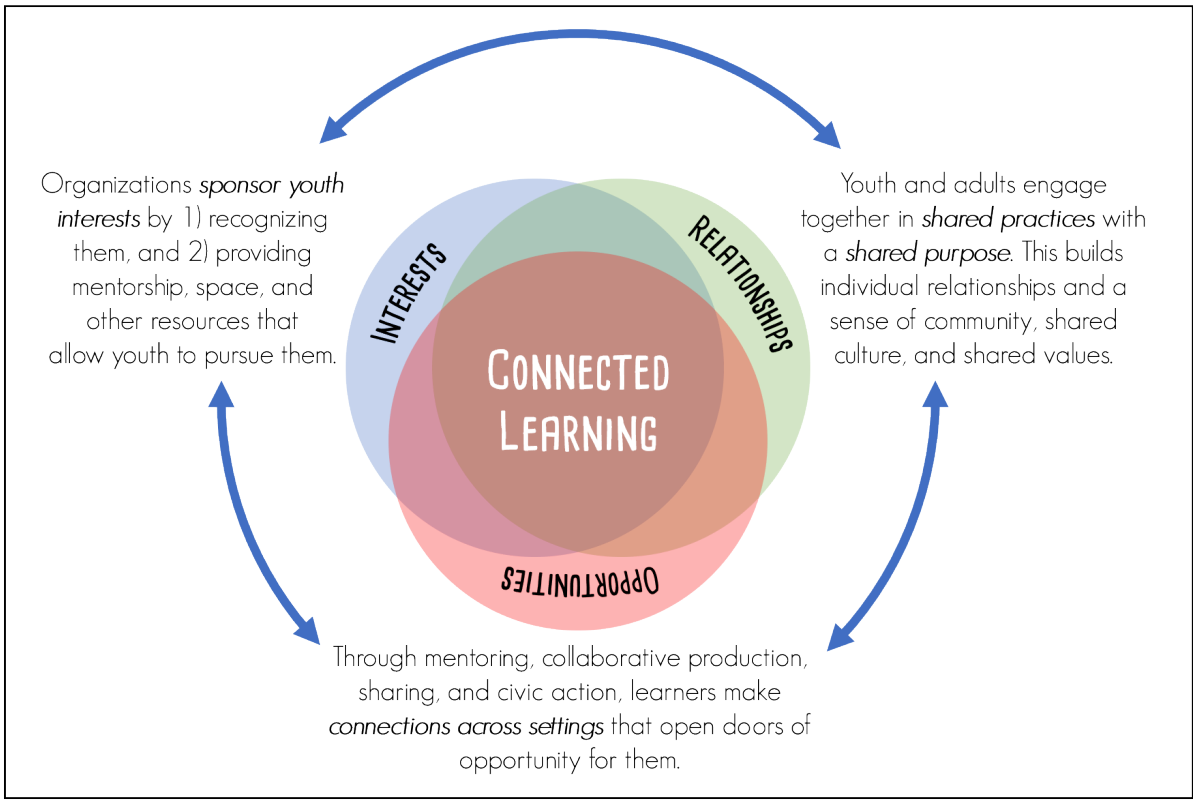
Research into family videogame playing validates its value to family communication, family closeness, and family satisfaction.

Wang et al. (2018) surveyed 361 adults with children in middle childhood through adolescence about their game playing and family well-being variables. Their quantitative analysis revealed direct effects for both frequency in game-playing and family closeness and satisfaction, even after controlling for age, gender, and education level. They also determined that family communication moderated (had an influence on) the effect of playing and family closeness, but only for those families with lower levels of family communication. Families reported finding fun, spending time together, and feeling closer when they played videogames, presenting a positive picture of the activity.

Pearce and colleagues (2021) examined the use of the videogame Animal Crossing with the idea of using entertainment as a way to cope during the COVID-19 pandemic. From interviews with parents and their children (in some households, both parents or all children were not interviewed; children ranged from 5–15 years), the authors found that playing the game contributed both to emotion-focused coping and problem-focused coping. Emotional-focused coping includes escapist/avoidant, distraction, mood management, emotional expression, and spending time together. Problem-focused coping included being occupied and passing the time, which offered parents a way to protectively buffer stress. Playing the game lent to being part of a routine, which related to resilience by individuals and the whole family. Finally, playing offered a way to socially interact, something which, during the pandemic, was very limited. Children expressed that when they played the game with others there were "kind of hanging out with people" (p. 12).

Connected Learning

In Chapter 5 we considered the role of technology in children's learning. Traditionally, we think of "educational technology" as that used by teachers and schools in schools and to assist children with homework. But the connected learning paradigm unbound learning from a place or space to follow the individual's pursuit across what Barron (2006) refers to as a "learning ecology." As an example, a child interested in dinosaurs may talk about them in class as part of a science curriculum. She may learn about different dinosaurs, their names, their anatomies, and whether they were predators or prey. Beyond the classroom, however, she may further explore dinosaurs online, in applications and games, in ways that sharpen her knowledge and ability to differentiate. Her parent may plan the family vacation around a special exhibit at a museum in a large city. An adventure to the seashore with her 4H club enables her to look for fossils, which she then takes back home and, with the help of her parent and the internet, identifies as part of the Paleolithic age.



The Connected Learning Framework, Instruction and Pedagogy for Youth in Public Libraries, CC BY-NC-SA 3.0

Connected learning uses technology, space, time, and especially the interest of other people to build engagement in learning. Those who assist the child in this engagement are called "learning heroes." Parents' funds of knowledge can flow into family activities (Rogoff, 2003) to connect children to history, culture, and experience, further tying together family members' understanding and interests. Beyond family-specific opportunities for connected learning, the concept, when applied to minority youth and their exploration of new media and technology for learning, creativity, and personal identity, finds real promise (Watkins et al., 2018). The Digital Edge provides results from a year-long ethnographic study of adolescents at an urban high school, incorporating interviews with teens, parents, and teachers, and observations of the technology-enhanced settings in school and especially out. Results suggests that teens' "eager adoption of different technologies forges new possibilities for learning and creating that recognize the collective power of youth: peer networks, inventive uses of technology, and impassioned interests that are remaking the digital world."

The figure above is taken from research by Barron et al. on family involvement in children's digital learning (2009). The table below lists the fluency-building items for which children indicated frequency in creating with the aid of their parents. The research identified both the learning ecology supporting children's technological fluency, and the role that parents play in facilitating that learning. Readers are encouraged to visit or subscribe to the Connected Learning Alliance (https://clalliance.org/about-connected-learning/) to

explore an array of publications and projects that indicate the intersecting role of interests, relationships, and opportunities, many of which involving families, as mechanisms for fostering positive youth development and family life.

Appendix A: Fluency-Building Items from Interest, Access, and Experience Survey

How often have you done the following computer-related activities?

(please mark only one box per item)	Never	Once or twice	3 to 6 times	More than 6 times
Created multimedia presentations that included pictures or movies or sounds using PowerPoint or another application				
Written code using a programming language like C, Java, Logo, Perl				
Made a publication such as a brochure or newspaper using a desktop publishing program like PageMaker or Word				
Started your own newsgroup or discussion group on the Internet				
Created a website using an application like Dreamweaver or FrontPage				
Hand-coded a webpage using HTML				
Published a site on the Web so that other people could see it				
Created a piece of art using an authoring tool like Photoshop or Paint Shop				
Designed a 2D or 3D model or drawing using a tool like CAD or ModelShop				
Built a robot or created an invention of any kind using technology				
Used a simulation to model a real life situation or set of data (*e.g., population over time, the spread of disease, or speeds with varying resistance*)				
Made a database				
Created a digital movie				
Created an animation or cartoon				
Created a computer game using software like Game Maker or through a programming language				

Appendix A: Fluency-Building Items from Interest, Access, and Experience Survey

Created a piece of music

Adapted from Barron, et al (2009). Parents as learning partners in the development of technological fluency. *International Journal of Learning and Media*, 1(2), 55-77.

Joint Exploration of Media and Technology

Family podcasting

An even more tangible way that families can be involved in cohesive ways with technology is to co-create technology together. This may include building a website or maintaining a social media page, podcast, or a YouTube channel. A good example of this is the Nowatski family. Beginning in 2015, Al (the father) and his two children, Liam and Anna, created the Children of the Force podcast. At the time, the children were 6 and 8, respectively. They started the podcast because the family often talked about Star Wars. Weekly, they talk about all things Star Wars — digging into the lore, current films and TV shows, conventions, and news. The conversation moves to current events and the kids' opinions on a wide variety of topics. The podcast lasts about an hour, and as the children have gotten older and more involved in school, friends, and activities, they sometimes skip a week. Readers are encouraged to check out the Learning Activity that centers on this podcast. If watch the author's interview with the family (Liam and Anna are now in their teens), you can consider the ways in which doing the podcast as a family contributes to the family's cohesion, communication, and demonstration of flexibility.

Maker spaces

Ito et al.'s 2020 report on Connected Learning addresses how co-creation can be beneficial to children and the family. Co-creation can occur, for instance, in libraries that offer "maker spaces."

Intergenerational learning environments can offer non-traditional configurations of learners using technology together to create opportunities and reimagine relationships to technology and the natural world. Projects that have been studied include technologies with indigenous families, constructing identities through making projects, parents collaborating with children to learn, and eliciting family sense-making with language and culture in digital projects.

Learning through and about technology together

Tech Tales is a series of workshops that center on indigenous knowledge systems through storytelling, family culture, family values, intergenerational sharing, and robotics. Through comparative case study research, the scholars explored processes used by families in creating their stories. An example of this project, with a focus on family engineering, is discussed and shown here. As the description of Robotics and e-textiles backpacks for family learning says:

> In this video, we highlight a program called Tech Tales, a collaboration between the University of Washington, Pacific Science Center, Seattle Public Libraries, and Native American-serving organizations in the Pacific Northwest. In Tech Tales, nondominant families engage in engineering learning through storytelling, robotics, and e-textiles. At the center of the design is the recognition that all learning is cultural, and that all families and family members come to the workshop space with deep expertise around their own histories. As families animate their stories through robotics and programming through Scratch, they engage in playful and creative interactions, connecting relations and stories (stargazing, eagle relatives visiting, returning to Africa to reunite with family) with contemporary technologies (LEDs, motors, sensors), and they identify and explore new (or prior) interests while developing new competencies in multiple disciplinary forms of work (art, computer science, electrical engineering, and robotics).

Another project is Family Creative Learning (http://familycreativelearning.org/), created by faculty at the University of Colorado-Boulder. Families are invited to learn together about computing, and to interact with each other, working in teams as families and with other families. Through the experience, multiple points of learning occur, and relationships develop within the family and with other families. Common themes from the project include the shifting perspective of oneself, constructing identity, and becoming empowered. A leader's guide supports the delivery of similar workshops worldwide. Readers are encouraged to seek more information on the project website.

Establishing Family Rules about Technology Use as a Family

Grace Duffy CC BY-NC-ND.

Whether families use technology alone or together, research supports the value of clear communication about technology use. While we've discussed the ways in which technology supports family communication and cohesion, focusing on communication helps families also set rules about technology management and device use that are shared and benefit the group. Yet these rules may not come easily for everyone. As noted in the previous chapter, parents who feel more knowledgeable about the use and impacts of technology are more likely to instill guidelines or practice authoritative practices to negotiate use that is safe and reasonable. Those lacking in parental competence may either place straight guidelines without conversation or be laissez faire and not engaged around children's use (Brito et al., 2017). Children's own desire for and adherence to family rules around screen time and screen use will vary by age and influences from their wider social ecology. As our insight from Lanigan's socio-technological framework indicates, family technology rules are influenced by the attitudes, preferences, and behaviors of each family member. The discussion about family rules, therefore, reflects family communication as indicative of the perspectives of each family member.

An aim of family communication is to reach shared perspectives, with guidance accommodating the needs of all. What are some techniques for doing this, specific to screen time among family members?

Let's take phones at dinner time. For many families, meal time is the one time during the day that everyone is together. Food is shared, conversation about the day keeps everyone up to date, and there may be deep cultural or religious elements to family dinner. It's no surprise, then, that as a society we might be concerned that phones have become a distraction during mealtime. As Turkle (2015) describes, family members are alone, together.

In 2016, Commonsense Media examined the impact of devices at the dinner table. The study surveyed 869

Consider the ways in which your family created rules about the use of technology together and in the household (if at all):

- Was it done through a family meeting?
- Did you use an application or

individuals representing families with at least one child between 2 and 17 years of age. Of that number, 807 reported having devices, 770 reported eating dinner together in the past seven days, and 362 reported using technology at dinner time. It's notable that just half of those who ate dinner together reported using technology during that time. That may be an indicator that families were already conscientiously choosing to keep phones away. While dinner time was viewed as very important to the majority of families (61%) with devices, it was not a time when most families talked about the day. In fact, only 19% reported that meal time was used for that purpose; driving their kids in the car was identified by the greatest number. About half of those who ate together and used devices reported that it makes them feel disconnected, yet 25% reported that phones brought the family together — likely through sharing information and pictures. This report gives an idea of the complexity of an issue that could mean challenges for some families that have no rules about technology, and that for others is quite simple: when together at dinner, whether they talk or not, phones are not present.

other resource to guide the decision-making?

- Did your parents set the rules and expect you to follow them? Or did rules occur along the way, when behavior created a conflict and the need for flexibility and resolution — for example, when a child in the family was exposed to an image or the victim of cyberbullying, or when the once peaceful dinnertime conversation became affected by a family member's technology use?
- Did the eventual rules reflect the interests of all?
- What mechanisms were in place to ensure that all family members followed the rules? Or were there dynamics that made following rules as a family a challenge?

"Make areas of your home screen free. Learn the 5 screen time strategies for parents and teachers on our blog. http://bit.ly/eduroscreentime

There are a variety of tools and resources available to help families determine screen time and safe technology use and to identify common ground on technology use. One is the Family Media Plan by the American Academy of Pediatrics. This tool encourages parents and each child to identify a plan together, based on the child's age. There is a long checklist of items that the parent and child can select jointly, then use daily to monitor the child's use. What is the advantage to families of having this kind of checklist for self-creation of a plan? One of the Learning Activities asks you to create a media plan for three children of different ages, then compare differences in what they would do and how it reflects their development. It also encourages you to reflect on the ability of that child and the family to follow through on monitoring the actions. Yet one criticism of the Family Media Plan is that guidance is offered only for children age 18 and younger. Parents can have as much difficulty putting the phone down, or engage in practices that are distracting to others or unhealthy for themselves.

As we'll discuss in the next chapter, self-regulation and the establishment of boundaries are new skills for adults attempting to balance work and family in this post-COVID-19, high-tech world. This family education site of a digital media nonprofit suggests eight elements that all families should consider:

- Total screen time
- Screen-free times of the day
- Screen-free family events (including dinner time)
- Not using the phone while driving
- Not using screens before or during bedtime
- Tackling habits (e.g., by silencing phones to quiet the desire to check for messages)
- Creating a family pledge
- Identifying tech-free family activities

While information and communications technology can be a distraction and create conflict within a family, research indicates its value in encouraging family communication and strengthening family cohesion. The array of applications and devices for collaboration, creativity, and communication between family members has never been greater. For many families, technology tools — especially videoconferencing — were the single strongest way of maintaining family connections during COVID-19. These connections include extended

family members, and family members distant due to immigration, travel, and deployment. And videogames can be a fabulous way for family members to have fun, solve problems, and strengthen cognitive skills, and for parents to monitor children's media exposure.

Yet as families become increasingly busy and stressed, and children adapt to newer technologies at seemingly younger ages and parents attempt to stay vigilant, it can be a challenge to use technology in ways that are meaningful and maintain family connectedness without conflict. And for still other families, as discussed in Chapter 3, the limits on resources of access, time, and money can create differences both within and across families. With other life demands, technology use has become one more focus for family flexibility and accommodation to ensure connectedness and cohesion.

8.2 REFERENCES

Aarsand, P. (2007). Computer and Video Games in Family Life. Childhood (Copenhagen, Denmark), 14(2), 235-256.

About connected learning. Connected Learning Alliance. (2018, October 12). Retrieved June 22, 2022, from https://clalliance.org/about-connected-learning/

Barron, B. (2006). Interest and self-sustained learning as catalysts of development: A Learning Ecology Perspective. *Human Development*, 49, 193-224.

Barron, B., Martin, C. K., Takeuchi, L., & Fithian, R. (2009). Parents as learning partners in the development of technological fluency. *International Journal of Learning and Media*, 1(2), 55-77.

Brito, R., Francisco, R., Dias, P., & Chaudron, S. (2017). Family dynamics in digital homes: The role played by parental mediation in young children's digital practices around 14 European countries. *Contemporary Family Therapy*, 39(4), 271-280.

Children of the Force: The Interview. (2022). YouTube. Retrieved June 22, 2022, from https://youtu.be/8z2iknECiCM.

Commonsense announces national campaign to promote device-free dinner. Common Sense Media. (n.d.). Retrieved June 22, 2022, from https://www.commonsensemedia.org/press-releases/common-sense-announces-national-campaign-to-promote-device-free-dinner

Commonsense.org. (2017). Device Free Dinner with Will Ferrell. YouTube. Retrieved June 24, 2022, from https://youtu.be/6rgNz7TFsE0.

Device free dinner. Common Sense Media. (n.d.). Retrieved June 22, 2022, from https://www.commonsensemedia.org/device-free-dinner

Dower, E. (2015, July 30). 8 quick tips for curbing your family's screen time. FamilyEducation. Retrieved June 22, 2022, from https://www.familyeducation.com/life/kids-cell-phones/8-quick-tips-curbing-your-familys-screen-time

Entertainment Software Association. (2022, June 10). 2022 essential facts about the videogame industry. Retrieved June 22, 2022, from https://www.theesa.com/resource/2022-essential-facts-about-the-video-game-industry/

Family creative learning. Family Creative Learning. (n.d.). Retrieved June 22, 2022, from http://familycreativelearning.org/

Ito, M., Arum, R., Conley, D., Gutiérrez, K., Kirshner, B., Livingstone, S., ... & Watkins, S. C. (2020). The Connected Learning Research Network: Reflections on a Decade of Engaged Scholarship. Irvine, CA: Connected Learning Alliance. https://clalliance.org/publications/

Karraker, M. (2015). Global families in a digital age. In C. Breuss. *Families in a Digital World*. NY: Peter Lang., 55-75.

Lebow J. L. (2020). Family in the Age of COVID-19. Family process, 59(2), 309–312. https://doi.org/10.1111/famp.12543

McCarthy, E., & Joyce, A. (2021, April 27). A better normal | The pandemic changed everything about family life. These are the parts parents want to keep. The Washington Post. Retrieved June 22, 2022, from https://www.washingtonpost.com/lifestyle/interactive/2021/pandemic-parenting-life-changes-return/

Nathanson, A. (2002). The Unintended Effects of Parental Mediation of Television on Adolescents. *Media Psychology*, 4(3), 207-230.

Nouwens, M, Griggio, CF, Mackay, WE (2017) "WhatsApp is for family; Messenger is for friends" communication places in app ecosystems. In: Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems, Denver, CO, 6–11 May, pp. 727–735. New York: ACM.

Padilla-Walker, L. M., Coyne, S. M., & Fraser, A. M. (2012). Getting a high-speed family connection: Associations between family media use and family connection. *Family Relations*, 61(3), 426-440.

Parreñas, R. S., and Boris, E. (Eds.). (2010). Intimate Labors: Cultures, Technologies, and the Politics of Care. Stanford University Press.

Pearce, K. E., Yip, J. C., Lee, J. H., Martinez, J. J., Windleharth, T. W., Bhattacharya, A., & Li, Q. (2021). Families playing animal crossing together: coping with videogames during the COVID-19 pandemic. *Games and Culture*, 15554120211056125.

Robinson, C. C., Mandleco, B., & Olsen, S. F. (2001). The parenting styles and dimension questionnaire (PSDQ). In B. F. Perlmutter, J. Touliatos, & G. W. Holden (Eds.), Handbook of family measurement techniques: 3 (pp. 319-321). Thousand Oaks, CA: SAGE Publications, Inc.

Rogoff, B. (2003). The cultural nature of human development. Oxford: Oxford University Press.

Rose, L., Yu, L., Casey, J., Cook, A., Metaxa, V., Pattison, N., . . . Meyer, J. (2021). Communication and

Virtual Visiting for Families of Patients in Intensive Care during the COVID-19 Pandemic: A UK National Survey. Annals of the American Thoracic Society, 18(10), 1685-1692.

Rudi, J., Dworkin, J., Walker, S. K. and Doty, J. L. (2014). Parents' use of information and communications technologies for family communication: differences by age of children, *Information, Communication & Society*, DOI: 10.1080/1369118X.2014.934390

Stern, M., & Messer, C. (2009). How Family Members Stay in Touch: A Quantitative Investigation of Core Family Networks. *Marriage & Family Review*, 45(6-8), 654-676.

Tariq, A., Muñoz Sáez, D., & Khan, S. (2022). Social media use and family connectedness: A systematic review of quantitative literature. *New Media & Society*, 24(3), 815-832.

Turkle, S. (2015, September 27). "Stop Googling. Let's talk." *New York Times*. http://www.nytimes.com/2015/09/27/opinion/sunday/stop-googling-lets-talk.html

Tzou, C. (2018, May 13). TechTales: Supporting family engineering learning. 2018 STEM for All Video Showcase: Transforming the Educational Landscape. Retrieved June 22, 2022, from https://stemforall2018.videohall.com/presentations/1144

Voida, A., & Greenberg, S. (2011). Console gaming across generations: Exploring intergenerational interactions in collocated console gaming. *Universal Access in the Information Society*, 11(1), 45-56.

Walker, S., Dworkin, J. and Connell, J. (2011). Variation in Parent Use of Information and Communications Technology: Does Quantity Matter?. *Family and Consumer Sciences Research Journal*. 40(2), 106-119.

Walker, J., Duetzmann, S., Wrobel, L., & Duetzmann, M. (n.d.). Get your family game on! RSS. Retrieved June 22, 2022, from http://www.engagedfamilygaming.com/

Wang, B., Taylor, L., & Sun, Q. (2018). Families that play together stay together: Investigating family bonding through videogames. *New Media & Society*, 20(11), 4074-4094.

Watkins, S. C., & Cho, A. (2018). The Digital Edge: How Black and Latino youth navigate digital inequality. New York University press.

Wrobel, L., & Farough, A. (n.d.). Parent Resources Archives. RSS. Retrieved June 22, 2022, from https://engagedfamilygaming.com/parent-resources

8.3 LEARNING ACTIVITIES

Family Creative Learning project

Create (or at least plan) your own Family Creative Learning project. Review the facilitator's handbook and information about the overall project on the website. Using pages 8–18 of the guide, plan a project (set of workshops) for a community of families with 7–12-year-old children. This may be a community well-known to you (e.g., your younger sister's elementary school; the afterschool program you work in), or it may be an aspirational community you feel would benefit from a project like this. Add as much detail as you can, including the type of food to be shared, the projects developed, and outcomes you hope to achieve. Don't worry about being familiar with the software mentioned in the handbook (newer or better technology may be available anyway). The important thing is that you use the basic elements and aims of this project to plan for active engagement and relationship building between families.

Children of the Force

In the chapter we briefly discuss the Children of the Force podcast, a product of Al Nowatski and his children, Liam and Anna (now teenagers). The podcast, started in 2016, arose from their shared interest in Star Wars. Episodes can be found at their website: childrenoftheforce.com. Select at least one of the episodes to listen to. You can also watch this interview with the family from the spring of 2022:

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://open.lib.umn.edu/technologyfamily/?p=355#oembed-1

Consider the following questions:

- What does the activity mean to the family sense of closeness (cohesion)? How does the activity serve as a platform for family communication, and as a demonstration of family/family member flexibility?
- How is Al asserting his role in the family? How are his children asserting their roles as children? How does the technology experience affect the execution of those roles, rules, and structure? How does it affect the processes of relationship maintenance and strengthening?
- Consider the contribution of creating this podcast to each child's development over time. In what ways might it influence the sense of identity? Self-concept? Social awareness?
- How might Al operate as a "learning hero" as one or both of the children build on the podcast experience to engage with their interests?

Family Media Plan

The American Academy of Pediatrics offers a Family Media Plan, an online tool which includes helpful guidelines for safe and healthy technology use for children, and for shared decision-making by children and their parents.

- Play around with it to see how it works, and create separate plans for a family with three children at different ages.
- Review each plan. How did you determine what to include for each child based on their age?
- How easy or difficult would it be for a family to help all children follow this plan?
- Consider your role as a family professional (e.g., therapist, educator, family service provider). How would you help families work with the plan?

Co-viewing Media

Commonsense Media offers helpful guidelines on co-viewing media with young children in ways that are helpful to their learning and to parent/child relationships. Explore the tips and explanations:

- Focus their attention.
- Encourage them to think about the order of events.
- Strengthen their understanding.
- Make it relatable.
- Expand on what kids say.

Now select a popular film you might watch with a child between 4 and 8 years old (if you can't think of one, Commonsense Media also has a very helpful guide to media selection based on child age). Watch the film one time through, taking notes on each of the points above. Then create a media viewing guide for parents or caregivers to use to co-view the movie with their child.

8.4 BLOG PROMPTS

In Common Sense Media's "device-free dinner" research, a news outlet might report the results like this:

- 51% of parents report that having devices at the dinner table makes them feel disconnected.
- 35% of parents report that having devices at the dinner table causes arguments.

Examine the study report. Based on this reporting, are these findings correct? Was the study done in a way that gives you confidence in the findings?

This activity is useful for reading research findings. Here are a few suggestions:

1. Look at the central research question. What was the study trying to find out?
2. Check the method. Based on what they wanted to learn, was their sample representative of the population they reported on? How did they gather the data? Is the method reliable?
3. Examine how many people were in the total sample (n=867). Then check the reporting of the numbers for each part of the report. How did the news outlet get the percentage reported? Is it representative of the whole sample? If not, which portion is it referring to?
4. Are there other findings that might have painted a different picture of families, devices, dinner time, and quality time together?
5. Put on your critical hat, and scrutinize the study.

As a related post, say you were a developer for Commonsense Media and your team was to determine a strategy that would be meaningful to parents. Would you aim toward recommendations and tips on reducing phones during dinnertime? Why? If not, would you have another message for parents?

Based on the data from the videogame industry, many families play games together, and parents see that the time with their children is well spent. Yet parents are also concerned about their children's exposure to too much screen time and too much violence, two factors likely with the use of videogames. What do we recommend to parents who might be fond of videogames and would like to play them with their children so that use is safe and healthy, as well as fun and a way to connect as a family? How would guidelines vary based on the age of the child?

8.5 ADDITIONAL RESOURCES & READINGS

Gaming

- Essential facts about the VideoGame industry: 2022 report from the Entertainment Software Association
- Website: Engaged Family Gaming

Setting Family Rules on Technology Use

- App: Our Pact
- AAP Family Media Plan
- Commonsense Media: Tips for a Device Free Dinner

Becoming Good Digital Citizens Together

- Digizen "Raises awareness and understanding of what digital citizenship is and encourages users of technology to be and become responsible DIGItal citiZENS"

- Commonsense Media's digital citizenship

Family Connectivity

- New York Times: 5 Ways to Stay in Touch With Less Tech-Savvy Family and Friends https://www.nytimes.com/2020/05/06/smarter-living/coronavirus-facebook-portal-echo-show-google-nest-hub.html

- Helping you make technology work for your family https://families.google/

CHAPTER 9: WHAT BOUNDARIES? TECHNOLOGY'S ROLE IN WORK AND FAMILY BALANCE

9.1 WHAT BOUNDARIES? TECHNOLOGY'S ROLE IN WORK AND FAMILY BALANCE

No is a complete sentence.

—— Anne Lamont

Chapter Insights

- Work is an external system influence on families.
- Boundary theory is often used to describe work-family balance. Basic ideas in the theory include terms like **boundary permeability**, **negative or positive spillover** and **boundary keepers.**
- Consider this statement: "Technology is theoretically neutral and does not dictate boundary permeability." Do you agree or disagree?
- The are many ways ICT is used in work-family balance. It can influence – positively or negatively — family satisfaction, workplace performance and individual's mental health.
- The term "new ways of working" is used to describe more flexible arrangements for work. Consider generational differences in the desire for flexibility and these new work arrangements. Consider too what flexibility and work arrangements means in studies that reveal challenges to the individual's mental health.
- A review of the research presented in this chapter. The picture it paints is quite complex and unclear. What does that tell you about the question of technology's influence on work-family balance?
- The video interview with Simon Sinek presents a fairly strong opinion about how well Millennials and GenZers were prepared for the workforce, and the need for companies to

accommodate. After viewing the video see if you agree. Or perhaps your thoughts are less black and white on this issue.

- Our collective experience using ICT during the COVID-19 pandemic may have shifted perspectives about work and family balance. After your own experience with school/work/home life during COVID-19, consider your thoughts about the role, influence and value (and perhaps consequences) of information and communications technology.
- Policy recommendations organizational action are listed in the chapter. How might businesses and universities (as a business and an institution that helps prepare future professionals) support individual's acquisition of "digital cultural capital"?
- Given predictions of new ways of working and potential impacts on individuals and families, there are new roles that family professionals can and should play in aiding families now and in the future for maintaining a healthy balance.
- After reading this chapter, identify what you feel inspired by, the questions that remain for you, and the steps you can take for your own technology use to be more intentional.

Introduction

If COVID-19 brought families anything positive, it was the ability to complete multiple responsibilities in a single location and with fewer constraints on time. Many families were home-bound, and thus needed to attend to work, school, interests, religious fulfillment, caregiving, and other matters from home. They relied on the internet and digital communication tools as they had before the quarantine, but this time without the traditional bounds of place and time.

These images captures what it was like for many:

working with baby CC 2.0 BY NC-ND Jenny Bradford.

Jeffrey Smith CC-BY-NC-ND

These mothers are juggling multiple responsibilities, accommodating attention across needs, and using technology to fulfill demands. When you look at these images, what emotions arise for you? How do you think the mothers feel? How about their children? Imagine yourself in a similar situation. Demands pile up across work/school/activities and in your personal/family/friend life. And somewhere in the middle are the intentions you have for your health and well-being (sleep, anyone?).

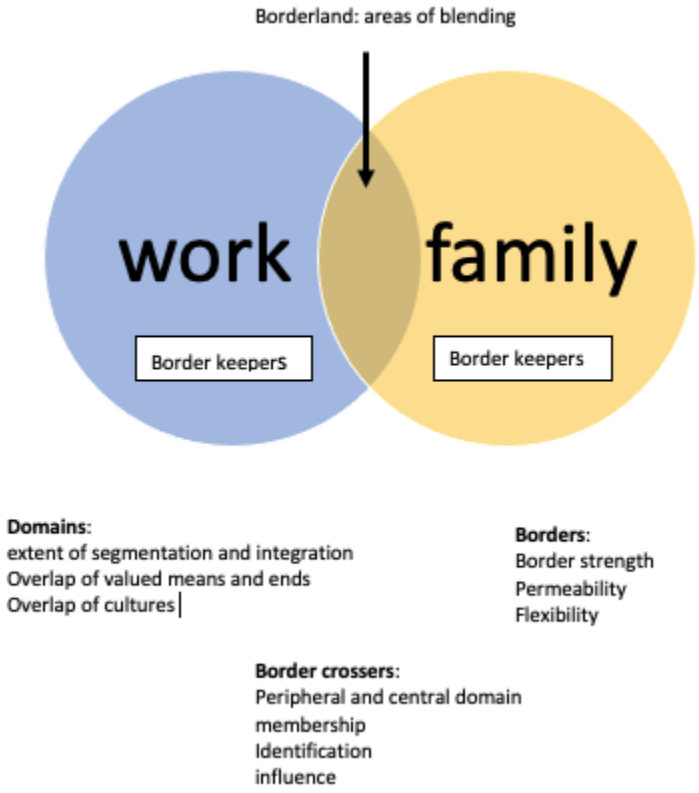
The concept of work-family balance (or other balance of role demands) relates to the satisfaction that results when an individual, as a member of a family, competently straddles role demands across the spheres of the household and workplace (and often additional domains). Our interest in work and family balance isn't new. Scholars have long been researching and theorizing about the ways in which individuals can successfully balance their attention, energy, and focus across roles in multiple spheres, with success having many

implications. Workplaces vary, as do work demands. For some families, balance results from tightly bounded dimensions (e.g., the 9-to-5 external workplace and the family home); for others, the integration of work life and family is more seamless or more complex, such as when work responsibilities lie in a family-run business. Over the decades, changes in parents' work patterns — particularly with increased participation by women in paid work, increased work hours, and non-standard/atypical work hours (time spent working outside of the workplace) — raised interest in the topic by scholars. And in the last 20 years, access to the internet and the advent of mobile devices has exponentially made study of work-family balance more complex.

Scholars have long been researching and theorizing about the ways in which individuals can successfully balance their attention, energy, and focus across roles in multiple spheres, with success having many implications.

Perspectives on Work-family Balance

Boundary theory is frequently used to explain the dynamics of work-family balance and to identify antecedents and consequences (Berkowsky, 2013; Olson-Buchanan et al., 2016; Nam, 2014; Rice, 2017). **Boundaries of time and space**, in particular, are seen as either fixed or permeable in reinforcing or allowing fluidity in the execution of role demands. Physical spaces and the persons in those spaces — the boundary keepers (e.g., employers, family members) — help reinforce boundaries by laying explicit and tacit expectations on the individual for role fulfillment.



Work-family balance and boundary theory. Adapted from Clark, 2000.

Clark's (2000) discussion of boundary theory as it affects families observes that differences in the balance experience are characterized by degrees of permeability in boundaries and flexibility in the execution of work/family roles. **Permeability** indicates whether "elements from one domain are readily available in the other; the ability to be physically in one setting yet perform a role psychologically from another" (p. 1020). A father who calls to check on his children who are home after school is demonstrating that the boundary of the family is permeable as the demands of his role enter the workplace. This is the result of his work conditions and his psychological separation from work to make the phone call.

Architect at work in home office. Permission-ShareAlike 4.0 International. Peter Theony

Flexible boundaries occur when "a person could relax the boundary to meet the demands of the other domain," and when spatial and temporal markers of a boundary can be moved (Nam, 2014; p.1020). For example, when a teacher grades papers over the weekend, and at home, the work boundary is flexible. The responsibilities of work are completed in a home-based (or other) setting. Boundary crossing occurs when there is some level of integration: high permeability and high flexibility, or high flexibility and low permeability, offer autonomy (the choice for role completion in one domain or another); low flexibility and high permeability result in interference (higher probability of roles enacted in one domain to the exclusion of the other), and low flexibility and low permeability mean segmentation (or boundary keeping). Nam observes that individuals with the potential for interference are more likely to suffer the consequences of heavy workload, more stress, and diminished satisfaction.

Transfer, or spillover, occurs when the individual's mood resulting from handling demands in one sphere affects the other. Spillover can be negative (e.g, work stress taken out on others at home) or positive, also known as enrichment (e.g., getting a promotion at work positively affects the parent's mood at home). Berkowsky (2013) refers to this as cross-domain compensation. Competencies gained in multiple roles can also help the individual deal with the negative stresses associated with roles in one domain. A parent who receives a positive review at work, for example, may carry that feeling of competence in to their childrearing attitudes. Recovery periods return the sense of balance and individual well-being after experiencing and then resolving work-family conflict (Demerouti et al., 2014).

There are traditionally **three domains of interest when studying work-family balance: the workplace, the family, and the individua**l. Studies may also examine the wider influence of balance on society (reviews by Olson-Buchanan et al., 2016, and Rice, 2017, indicate potential impacts on society; Shockley et al., 2018, provide a cross-cultural perspective). An example of a societal benefit is when the workforce is solid as the result of contented employees who feel that they successfully can balance responsibilities across domains. Family, individual, and work outcomes reflect comprehensive and systemic impacts. More work hours, for instance, may mean greater work productivity, yet also more role strain, personal stress on the individual, and family dissatisfaction.

Based on a review of the international literature, Wheeler et al. (2018) recognize secondary effects. Most often, parents' stress from conflict or imbalance influences children through their own psychological functioning and relationships. Children's mental health and/or achievement can be affected. They cite cross-family

differences in cultural orientation, including gender equalitarianism, and intrafamily (between parent) differences in occupational profiles that may reveal differences in child impact.

Some of the outcomes studied when considering work and family balance:

Family	Individual	Workplace	Society
Satisfaction with personal relationships Family satisfaction/conflict	Physical and mental health Use of prescription medications Perception of stress	Work productivity Work satisfaction	Percentage of women in the workforce
Secondary: Children's mental health Children's academic achievement			

The ability to balance roles may be viewed as a skill possessed by the individual, when in fact a complexity of influences affects the ways in which balance is achieved (Shockley et al., 2018). Working parents in countries with high rates of inequality and low rates of economic growth and inflation, for example, value the opportunity for longer working hours, so their perception of stress from work hours will be different. The perception of conflict also appears to be influenced by culture (Shockley, et al, 2018; Xu et al., 2018). Countries with more collectivistic cultures view family-to-work conflict as less of an issue; because work is perceived as a means to provide support for and honor the family, additional work and longer work hours are seen less as a conflict and more as helping the family. The perception that longer work hours create conflict in the family is more likely in countries with a more individualistic worldview.

Gender equality and supports to the family play a significant role in demonstrations of balance. Because women take more responsibility for domestic housework and child caring, it is harder for employed mothers to achieve balance without additional child care. Higher rates of family vs. work conflict are seen in countries that have a wide gender gap (Shockley et al., 2018). Disparities also occur across education lines. In the response to COVID-19 pandemic, many workplaces offered extended leave and benefits for child care. Additional benefits such as flexible or reduced hours, paid/unpaid time off, and child care or tutoring benefits favor those with higher levels of education (Miller, 2020). For example, 29% of those with post-graduate degrees report paid time off, compared to just 9% of those with less than a college educationt.

Even with the availability of work-family policies in recent decades, a backlash has challenged their success.

Perrigno et al. (2018) observe four mechanisms at play in the effort to sabotage well-intentioned work-family policies: 1) inequity, 2) stigma, 3) spillover, and 4) strategy. One can imagine that integrating ICT in the workplace and attempting balance with family responsibilities only makes policy action even more complex and challenging.

Moving forward, readers are cautioned about extant research on work-family balance. Focusing only on the existing body of research about worker and family experiences can lead to overgeneralization. Too often, there is a tendency for research to reflect the experiences of those who are "WEIRD" (Western, educated, industrialized, rich, and democratic).

Technology Integration and Work-Family Balance

"Working breakfast at Mr Brightside, Caulfield South" by avlxyz is marked with CC BY-NC 2.0.

While ICT has long played a role in in cross-boundary role maintenance (e.g., the mother who uses a phone to check on her children after school), mobile technologies and virtual environments can seem to practically evaporate boundaries of time and place in how and when work gets done. In fact, the fluid nature of work due to the use of technology across boundaries in the last 20 years leads Hughes and Silver (2020) to assert that, rather than seeing work and home in balance, how work gets done should be seen as the new standard. Adjustments to family life, with more flexible workplace arrangements, are being embraced as a fact of the future (Anderson et al., 2021).

Technological innovation for the workplace may have tapped into a longstanding need. Rice (2017) observed that many workers do not find that workplace hours accommodate a sense of balance with family responsibilities. She cites a 2010 study in which 60% of Australian workers indicated a preference for telework. And 2017 data indicated that workers would take an 8% pay reduction if it allowed them to work from home (What a way to make a living, 2020). Nevertheless, prior to COVID-19, fewer than 5% of the labor force in the U.S., and 2–9% in Europe, reported exclusively working from home (Eurostat, 2017). These statistics highlight the dramatic effect of the pandemic on a more mobile workplace. Equally, the availability of college courses online shifted exponentially with COVID.

For those whose jobs can adapt to these "new ways of working" (Demerouti et al., 2014), new challenges are present. Studies of teleworking offer insight into the conditions which may contribute to a sense of balance or imbalance. Early research on technology integration indicated positives for worker productivity, and for worker perception of autonomy, yet later work suggested minimal benefit for working from home (Olson-

Buchanan et al., 2016, p. 21). In particular, women did not demonstrate higher job satisfaction even if they perceived more control and flexibility. Solis' (2016) examination of teleworkers in Costa Rica identified that having more work time at home, shared or inadequate space, and inflexible work schedules related to perceptions of work-family interference. In part, the presence of the mother at home, though working, may over time enhance children's expectations of her availability. Employer attitude also appears to contribute to teleworking success; the actions of managers who are reluctant to trust employees to be productive can diminish employee feelings of autonomy and recognition.

Technological innovation and work arrangements may create further divides among families.

Many jobs, however, do not offer flexibility in time or work context or present the autonomy for determining work (or family) interruptions (Olson-Buchanan et al., 2016). This is particularly true in professions requiring skilled labor. Latin American countries like Ecuador, Guatemala, and Bolivia, more greatly dependent on manufacturing or agriculture, have less potential for telework (Pimintel, 2020). This was also evident for essential workers during COVID-19, for whom the need to be present at work and the need for child care support continued uninterrupted.

The internet, and mobile and digital technologies, offer the promise of managing work with more autonomy and success amidst a more fluid landscape of a modern workplace culture that thrives on employee availability (Demerouti et a.l, 2014). Research on technology's influence on work-family balance before COVID-19 informs our understanding of the adjustments needed as we look to a future that is "tele-everything" (Anderson et al., 2021). Theoretically, perceiving work conditions as more flexible relates to higher job satisfaction. Use of mobile technologies might modify that relationship, however, if workers feel in less control due to communication demands (for example, from an employer during family time).

"Woman playing on her phone at work" by Rawpixel Ltd is licensed under CC BY 2.0.

Research by Nam (2014) examined the influence of internet and mobile phone use on 850 workers' perceived flexibility and permeability and on job outcomes (job satisfaction, job stress, and workload). Workers' sense of stress decreased with use of mobile phones for work. Nam found direct (positive) relationships between the use of technologies and perceptions of work and family flexibility and of work-family permeability. And these variables related to each other: permeability of work-to-family life was positively related to flexibility in work-to-family life. In other words, those using technology to accomplish work tasks at home were likely to facilitate home-related needs at work. For some workers, although the use of technology increased workload and perceived stress, it did not change the ability to balance work and family. For others, telework reduced feelings of stress, yet contributed to feelings of being overworked. And effects observed may reflect more than the direct impact on the individual; Ferguson et al. (2016) revealed that using technology to continue work from home can have compounded effects on the employee through influence on the family. They examined cell phone use at home for work by employees (so called "mWork"). An employee's decision to quit the job in response to heightened workplace demands related to strain that appeared to correlate with strain on family members.

Nam suggested that organizations continue to monitor employee satisfaction with the use of technology. The changing use of technology by employees at work and for work, and for work at home, requires that policies regarding work-life balance consider the growing interplay of technology with flexibility and worker satisfaction.

Antecedents, Outcomes, and Moderators of the Process in Technology and Work-Family Balance: a Complex and Shifting picture

Olson-Buchanan et al. (2016), Ollier-Malaterre et al. (2019), and Rice (2017) reviews research on work-family balance and technology. To help the reader visualize elements in the process, the table below lists variables studied as antecedents (or pre-existing conditions), outcomes, and moderators. These indicate relationship potential between technology use, reasons for use, individual differences, and individualized outcomes. Lending complexity is that the same variable may be conveyed differently depending on the research. Job

demands, for example, may be a predictor in one study, influencing whether the use of technology for boundary permeability is necessary, and appear in another as a moderator, affecting the degree to which using technology influences the balance.

Variable Type	Variable
Antecedents (factors influencing technology use for work & family)	Work: • higher job status, • work demands, • work norms/expectations Family: • expectations from family and friends, Individual • individual differences (e.g., ability to multitask, age, education), • perceived usefulness of the technology, • perceived ease of use
Outcomes	Work • productivity, hours worked, work-nonwork conflict, Individual • perceived flexibility or control (autonomy), • psychological strain, • job attitudes, • worker individual health (blood pressure, heart condition, frequency of illness), mental health (depression, stress, role strain), Family outcomes • family connectedness and satisfaction.

Moderators	Individual: • negative affect, • time management skills, • preference for segmentation, • gendered or personal demands, External: • social stressors, • technology support (or lack thereof), Job-related factors

Variables identified in technology and work-family balance research

Antecedents. Olson-Buchanan et al.'s (2016) review identified that use of ICTs to perform work during non-work time was positively predicted by perceived usefulness of the technology, along with job conditions (higher job status, work demands, work norms/expectations), expectations from family and friends, and the ability to multitask, and negatively predicted by preference for segmentation (individual difference for boundary maintenance). Rice (2017) similarly determined that use and comfort with technology predicted individual differences in work-family arrangements, which also influenced work and individual outcomes from flex arrangements.

Readers may remember discussion of Davis' technology acceptance model (TAM, 1989) in Chapter 2. The TAM characterizes use of technology in terms of positive perceptions toward that use. Individual differences — such as age and comfort with technology (Nam, 2014), gender, marital status, and work position — can influence the uptake of technology use for work-family balance. Millennials are more tech-savvy, yet less flexible with work outside of work settings, even though technologies make that possible. Marital status (and its correlation with childrearing responsibilities) and the demand for role responsibilities at home create the need to use

Expectations from the workplace can establish norms about how and when to use technology across boundaries (e.g., the employer who continues to send emails over the weekend with the expectation of response).

communication devices for coordination. Gender influence appears related to correlative societal and role demands — men with more education, for example, held jobs that enabled more autonomy. And work position influenced the degree to which individuals held boundary permeable/flexible positions that conditioned their use of technology.

Outcomes. A focus on workplace, family, and individual outcomes continues to be present in technology-related research. Work outcome variables include perceived flexibility or control (autonomy), work productivity, hours worked, work-nonwork conflict, psychological strain, and job attitudes. Family outcomes include family connectedness and satisfaction.

Perhaps the largest area of outcomes-research relates to the individual — specifically, dimensions of worker individual health (blood pressure, heart condition, frequency of illness), and mental health (depression, stress, role strain). Longer work hours and the negative spillover felt by family contribute to higher work-nonwork conflict, higher perceived stress, and burnout. Rice (2017) also reports that the high-pressure environment of always "being on," navigating irregular hours, and a potentially unpleasant physical environment can have physical and physiological costs. The review indicates that about half of a U.S. sample agreed that using ICTs increased their stress, the blurring of work-family boundaries, and conflict (p. 186).

The ability to work and meet family needs "any time, any place" can result in tremendous strain on the individual. Yet many families find value in having agency in when and how work and family roles are completed.

Writing about tele-work, Leineweber and Falkenberg (2018) report that Nordic countries have the highest rates in Europe of workers working from home. For these workers, the constant availability offered by new technologies and telework leads to feelings of constant involvement, including during free time. As Olson-Buchanan et al. (2016) observe, "the flexibility of time and space and role demand, aided by the use of boundary cross technologies, fosters role conflict by allowing for interruptions and distractions and hindering one's ability to meet the demands of the salient role" (p.18).

Social isolation is a potential result of telework or flexwork. Studies have observed that increased online communication has reduced casual conversation between colleagues (e.g., talk around the water cooler), which can then influence work outcomes. While working from home can mean the availability of a parent to care for a child or be present when the child is sick, consistent space and time flexibility can risk compromised productivity. Exploitation of the flexibility by employees to multitask can diminish chances for promotion and opportunities for achievement. This is particularly likely for women, the elderly, and those with children with disabilities, who have competing role expectations on their time. As a result, despite the availability of technologies that offer flexibility, the difficulty of doing both home and work roles well contributes to conflict and possibly weaker work performance.

Moderators. Research on work-family balance also identifies moderators in the individual, work, and family realms. Variables related to the individual include negative affect, time management skills, preference for segmentation, and gendered or personal demands. .

Educational achievement also predicts flexibility and an openness to using technology across boundaries. Nam (2014) asserts that individuals with more education tend to be more flexible with resources and energy to work in their home life domain. Yet they are also reluctant to let work interrupt their family life. So while they are willing to work from home (demonstrating flexibility), their action is not passive and shows agency in determining boundary permeability.

Those whose time management skills are challenged may use technology across boundaries, yet not feel or be productive.... workplace moderators (of ICT's influence on perception of balance include technology support and job status.

Moderators in the workplace include social stressors, technology support (or lack thereof), and job-related factors such as job status. Technological support, for example, boosts perceptions of flexibility, indirectly benefitting work satisfaction. It appears to work beyond aiding the individual's knowledge and confidence in using technology, providing an indirect boost to perceived flexibility and work satisfaction. A study of parent and family educators in the U.S. determined a strong relationship between workplace infrastructure (including technical support) and encouragement (including shared values for technology) and perceived usefulness and ease of use (Walker & Hong, 2017). Taken to its natural conclusion, technological support's value to individual technology comfort could positively influence competence in use for work-family balance, resulting in reduced work strain and burnout.

Family demands can influence worker attitudes. Workers whose family members have positive attitudes about technology's usefulness, for example, report higher work satisfaction. But these variables don't work in isolation. More recent advances in education, integrating technology in children's school work and learning, have introduced stresses on families as children spend time online and need assistance. A recent study by McKinsey and Lean (2020) observed that, for many women, this can influence the decision to leave their jobs. Justifications include lack of flexibility at work, feeling like they need to be available to work at all hours, housework and caregiving burdens, worry that their performance is being negatively judged because of caregiving responsibilities, discomfort sharing the challenges they are facing with teammates or managers, feeling blindsided by decisions that affect their day-to-day work, and feeling unable to bring their whole self to work. Black women and other women of color experience these constraints to a greater degree.

The future view of work

"Our Uber driver wins the award for most adorable tissue dispenser!" by Scott Beale is licensed under CC BY-NC-ND 2.0.

Looking to the future, experts foresee shifts in work that that will make it less placed-based, more flexible, more automated, and reliant on on-demand consumer expectations (Anderson et al., 2021; NAS, 2017). Ens et al. (2018) identified a digital work typology based on how work is reconfigured through the availability of digital technologies. This typology reflects job mobility (degree of flexibility in the location of work) and precarity (degree of instability due to flexible employment), and it was crafted to construct a notion of "decent digital work," or digital work that enables autonomy, competence, and belonging (p.2) They label worker types as follows: the gig worker (high precarity, low mobility), the digital nomad (high precarity, high mobility), the 9-to-5er (low mobility, low precarity,) and the traveling elite (high mobility, low precarity). Gig workers take ad hoc, temporary jobs, such as driving for Uber. Digital nomads work at jobs with high precarity but are not fixed to particular locations. A web developer who is mobile and works from different countries, for example, is a digital nomad.

	Low Mobility	**High Mobility**
High Precarity	Gig Worker	Digital Nomad
Low Precarity	Nine to Fiver	Traveling Elite

Digital Work Typology. Adapted from Ens et al. (2018). Decent digital work: Technology affordances and constraints. Paper presented at the Thirty ninth International Conference on Information Systems, San Francisco CA, USA

These new digital-work realities can affect individual well-being. The transition to more flexibility in location can challenge feelings of competence in managing tasks and time, and the sense of belonging. Consequences heighten with greater mobility (traveling elite) and precarity (digital nomad), threatening the sense of connection. According to the authors, "Autonomy suffers from a need to maintain a steady supply of work and meeting clients' needs" (p. 6). There exists the potential that spillover from these digital work arrangements can affect the workers' emotional release at home and the time needed for recovery.

Work-Family Balance Policy Recommendations Reflecting New Digital Realities

In 2021, the author prepared a background report for the United Nations on the role of technology in the family (Walker, 2021), with an emphasis on work-family balance. This section presents an adaptation of the report's policy recommendations.

Recommendations reflecting the integration of technology and work family balance lean heavily on flexibility, yet suggest structure that intentionally guides family, individual, and workplace well-being. A persuasive observation from the existing research is that employee perception of balance and preference factor strongly in technology use, adaptation, and outcomes, so workplace recommendations may allow employees to set their schedules (and work locations) to meet needs in both spheres yet provide them with guidance and follow-through on organizational policy about setting boundaries to lower personal stress and enrich family satisfaction and well-being (Demerouti et al., 2014).

A family-focused work-life vision **is more relevant now than ever, as the shift to tele-work and the removal of boundaries of space and time appears to predict future realities. Policy recommendations to promote work-family balance in the digital world supplement existing actions to create more flexible hours, leave policies, and supports related to childcare and children's education. Such policies are far ranging and promote quality early childhood education and childcare for all children.**

Individual competence in boundary management, however, must also be regarded, to aid in the development of what Ollier-Malaterre et al. (2019) call "**digital cultural capital**." Technology has been said to present a paradox through its problematization of work-nonwork boundary permeability. It makes permeability possible, yet creates challenges requiring individual attention and responsibility to provide equitable balance in role performance. "Digital cultural capital" represents the awareness, motivation, and skill to perform technology management. A new employee benefit, for instance, may be tailored educational supports on how to manage ICT to support work and family goals.

Employers can help foster more personal responsibility to avoid negative spillover in setting boundaries for communication — using smartphones wisely, deploying privacy management tools, practicing good digital citizenship and online self-presentation (Olson-Buchanan et al., 2016; Blum-Ross et al., 2018). As Ollier-Malaterre et al. (2019) stress, the development of "digital cultural capital" should be learned through the social class divides that enable some groups to develop skills over others.

Employers can acknowledge individual differences that might affect workers' abilities to work from home while also supporting their children's learning (McKinsey & LeanIn, 2020; What a way to make a living, 2020). "Boundary management" may be a new skill employees need to acquire. Providing support may reduce psychological stress and enhance parent/worker confidence, promoting mental health and well-being and potentially making parents more available to assist with their children's learning from home.

pixabay. attribution not required.

Policies must hold a vision for *future* innovation and what that will mean to the workplace and to families.

At the same time, employers must be wary of permeability effects on workers. Research suggests that workplace permeability benefits employers more than employees; when individuals lack the capacity to manage demands across work and family spheres, job dissatisfaction, job-related stress, and role overload occur. Policies for employees need to be consistent and clarify expectations for daily work and performance reviews (Blum-Ross et al., 2018). They should also regard individual differences in employee preference and avoid inequity and division. Older workers, for instance, hold different views on autonomy and permeability than younger one. Training and support programs that advance the technology skills of older workers can lessen gaps in worker performance.

Greater responsibility for the privacy and security of a more permeable, flexible work and family life in online spaces must be taken. As Ollier-Malaterre et al. (2019) note:

> technology amplifies the blurring...also because the very definitions of what is public and what is private are under scrutiny: Information shared on social media, for instance, is sometimes deemed by scholars and lawyers as private and sometimes public...In an era in which putting up curtains on windows and planting high trees

> around houses no longer suffices to safeguard privacy, many new questions for individuals arise about privacy, visibility and surveillance that societies or collective actions may at some point strive to regulate. (p. 435)

The reach of organizations expands with technology changes, ultimately affecting individual workers and the blurring of boundaries and roles. Attention needs to be placed on the longer-term exposure to forced teleworking (as with COVID, or permanent shifts made post-pandemic), and considerations necessary for workplace supports that extend to the home. Employers can consider financial subsidies that cover costs for home internet, ergonomic workspaces, and peripherals that make home-based work less taxing on personal resources. Other proactive planning will be for transitions as work-home arrangements change. As employees have flexed and reoriented their boundaries to satisfy work and family needs, a return to previous or adjusted arrangements will bring about the need for recovery (Dermouti et al, 2014) and support (McKinsey & LeanIn, 2020).

Research Considerations

Without a doubt, research on the intersection of work-family balance and technology needs to be expanded — in ways that include a greater representation of workers, work contexts, and family experiences, and that examine how cultural assumptions with regard to technology integration shape work-family policy. The French government, for example, encourages companies to minimize technology disruptions after work hours. This helps to control technological effects at multiple levels (Ollier-Malaterre et al., 2019).

Within the research, attention to individual and family outcomes from technology-integrated work-life balance must be elevated on par with that directed at workplace well-being. A systemic view must regard the reciprocal and transactional costs and benefits to the family, and should include the effects of work-family balance on children, an area that to date has been given limited attention in the literature. Children's well-being as influenced by parents' work status and work conditions deserves closer study. Work-family conflict, with its impact on the parent-child relationship (and inherent to this, parents' attention, communication, and responsivity), appears to be an indirect route through which work-family balance can influence externalizing or internalizing behaviors.

Disparities in work-family policy, and in its equitable execution, exist worldwide. U.S. policies for family leave and childcare support lag behind those of other countries that are economically competitive and have low employment rates. Might there be similar resistance to comprehensive policies that address the complexity of technology preferences, work demands, and the needs of families? In chapter 12 we consider the role of policy in integrating research findings on ICT and the family into the real world. The future of families demands that our critical lens extend to the role technology plays in the peaceful balance of work and family demands and benefits.

9.2 REFERENCES

Anderson, J., Rainie, L, and Vogels, E. (2021, February 18). Experts say the "New Normal" in 2025 will be far more tech-driven, presenting more challenges. https://www.pewresearch.org/internet/2021/02/18/experts-say-the-new-normal-in-2025-will-be-far-more-tech-driven-presenting-more-big-challenges/

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In Action Control (pp.11-39). Springer Berlin Heidelberg.

Berkowsky, R. W. (2013). When you just cannot get away: Exploring the use of information and communication technologies in facilitating negative work/home spillover. *Information, Communication and Society*, 16(4), 519-541.

Blum-Ross, A., Donoso, V., Dinh, T., Mascheroni, G., O'Neill, B., Riesmeyer, C., and Stoilova, M. (2018). Looking forward: Technological and social change in the lives of European children and young people. Report for the ICT Coalition for Children Online. Brussels: ICT Coalition.

Clark, S. C. (2000). Work/family border theory: A new theory of work/family balance. *Human Relations*, 53, 747–770.

Demerouti, E., Derks, D., Lieke, L., and Bakker, A. B. (2014). New ways of working: Impact on working conditions, work–family balance, and well-being. In The Impact of ICT on Quality of Working Life (pp. 123-141). Springer, Dordrecht

den Dulk, L., Groeneveld, S., Ollier-Malaterre, A., and Valcour, M. (2013). National context in work-life research: A multi-level cross-national analysis of the adoption of workplace work-life arrangements in Europe. *European Management Journal*, 31(5), 478–494.

den Dulk, L., and Peper, B. (2016). The impact of national policy on work-family experiences. The Oxford Handbook of Work and Family, 300-314

The Economist (2020, September 12). What a way to make a living. *The Economist*, Pp. 19-21.

Ens, N., Stein, M. K., and Blegind Jensen, T. (2018). Decent digital work: Technology affordances and constraints. Paper presented at the Thirty ninth International Conference on Information Systems, San Francisco CA, USA

EUROSTAT (2017) Digital Economy and Society Statistics – Households and Individuals,

http://ec.europa.eu/eurostat/statistics-explained/index.php/Digital_economy_and_society_statistics_-_households_and_individuals#Internet_usage

Ferguson, M., Carlson, D., Boswell, W., Whitten, D., Butts, M. M., and Kacmar, K. M. (2016). Tethered to work: A family systems approach linking mobile device use to turnover intentions. *Journal of Applied Psychology*, 101(4), 520.

Galovan, A, Fackrell, T., Buswell, L., Jones, B., Hill, E. J. and Carroll, S.J. (2010). The Work-Family Interface in the United States and Singapore: Conflict Across Cultures. *Journal of Family Psychology*, 24 (5), 646–656. https://doi.org/10.1037/a0020832

Hughes, K. D., and Silver, W. A. (2020). Beyond time-binds: Rethinking work–family dynamics for a mobile world. *Human Relations*, 73(7), 924-952.

Kossek, E. E., and Lee, K. (2017). Work-family conflict and work-life conflict. Oxford Research Encyclopedia of Business and Management. http://business.oxfordre.com/view/https://doi.org/10.1093/acrefore/9780190224851.001.0001/acrefore-9780190224851-e-52.

Leineweber, C., and Falkenberg, H. (2018). 15 A Review of Work–Family Research in the Nordic Region. The Cambridge Handbook of the Global Work–Family Interface, 288.

McKinsey & Company and LeanIn.org (2020) . Women in the Workplace 2020 report. Womenintheworkplace.com. https://wiw-report.s3.amazonaws.com/Women_in_the_Workplace_2020.pdf

Miller, C. C. (2020, September 17). Private tutors, pop up schools or nothing at all: How employers are helping parents. New York Times. https://www.nytimes.com/2020/09/17/upshot/pandemic-workers-benefits-disparity.html

Nam, T. (2014). Technology use and work-life balance. *Applied Research in Quality of Life*, 9(4), 1017-1040.

O'Brien, M. (2012). Work-family Balance Policies: Background Paper. Division for Social Policy and Development. New York: United Nations Department of Economic and Social Affairs.

Ollier-Malaterre, A., Jacobs, J. A., and Rothbard, N. P. (2019). Technology, work, and family: Digital cultural capital and boundary management. *Annual Review of Sociology*, 425-447.

Olson-Buchanan, J. B., Boswell, W. R., and Morgan, T. J. (2016). 24 The Role of Technology in Managing the Work and Nonwork Interface. The Oxford Handbook of Work and Family, 333. doi: 10.1093/oxfordhb/9780199337538.013.26

Perrigino, M. B., Dunford, B. B., and Wilson, K. S. (2018). Work–family backlash: The "dark side" of work–life balance (WLB) policies. *Academy of Management Annals*, 12(2), 600-630.

Pimentel, Joao Paulo. (August 16, 2020). Remote work came suddenly and is here to stay – and Latin America is no exception. Latin American Business Stories. https://labsnews.com/en/articles/society/remote-work-came-suddenly-and-is-here-to-stay-and-latin-america-is-no-exception/

Rice, R. E. (2017). Boundaries, and information and communication technologies. The Wiley Blackwell Handbook of the Psychology of the Internet at Work, 7696, 175-194.

Shockley, K., French, K. and Yu, P. (2018). Comprehensive review and synthesis of the cross-cultural work family literature. In Shockley, K., Shen, W., and Johnson, R. (Eds.). (2018). The Cambridge Handbook of the Global Work–Family Interface (Cambridge Handbooks in Psychology). Cambridge: Cambridge University Press. doi:10.1017/9781108235556

Solís, M. S. (2016) "Telework: conditions that have a positive and negative impact on the work-family conflict", Academia Revista Latinoamericana de Administración, Vol. 29 Issue: 4, pp.435-449, https://doi.org/10.1108/ARLA-10-2015-0289

Stanczyk, A. B., Henly, J. R., and Lambert, S. J. (2016). Enough time for housework? Low-wage work and desired housework time adjustments. *Journal of Marriage and Family*, 79(1), 243–260.

Walker, S. and Hong, S. (2017). Workplace Predictors of Parenting Educators' Technology Acceptance Attitudes, *Family and Consumer Sciences Research Journal*, 45 (4), 377–393.

Wheeler, L., Lee, B. and Svoboda, E. (2018). Implications of Work-Family Connections for Children's Well-Being across the Globe. In Shockley, K., Shen, W., and Johnson, R. (Eds.). The Cambridge Handbook of the Global Work–Family Interface (Cambridge Handbooks in Psychology). Cambridge: Cambridge University Press. Pp. 681-698. doi:10.1017/9781108235556

Willis, L. and Beryl, E. (2018) Using an online social media space to engage parents in student learning in the early-years: Enablers and impediments. *Digital Education Review*, 33, pp. 87-104.

Xu, S., Wang, Y., Mu, R., Jin, J., and Gao, F. (2018). The effects of work-family interface on domain-specific satisfaction and well-being across nations: The moderating effects of individualistic culture and economic development. *PsyCh* journal, 7(4), 248–267. https://doi.org/10.1002/pchj.226

9.3 LEARNING ACTIVITIES

Future family-friendly workplaces

This chapter discusses the notion of balance of roles and responsibilities between work, home, and one's personal life . COVID-19 advanced the idea of a fluid work space, unbounded by time or space, as white-collar workers worked from home. This enabled greater agency for individuals to manage demands. At the same time, for many — especially parents — the lack of boundaries made creating that balance even harder. As we "return to work," many workers and employers are mixed in their views about the healthiest and most effective work arrangements.

- Imagine a workspace arrangement in the near future that capitalizes on workers' needs to manage family and personal responsibilities. What would that look like?
- Imagine an arrangement that capitalizes on home-based settings. What policies or resources might the employer recommend or require to ensure that employees can be most productive?

Digital equities and work-family balance

Jobs that can be done anywhere, anytime offer the most flexibility in meeting work-family demands. These jobs often rely heavily on the internet and digital technologies. And they depend on the internet being available, and on devices being plentiful between workers and in households.

Consider the following professions:

- elementary school teacher
- computer programmer
- retail manager
- dental hygienist
- car mechanic

Can each be done at home? Do they need to be completed in a physical space? What information and communication technologies would aid the fulfillment of responsibilities for the family? Who may or may not have access to these devices? Who may or may not have access to the internet?

9.4 BLOG PROMPTS

What does the changing world of work mean for the field of family social science? Should we be changing how we teach about family relationships and management to adapt to work that is anywhere, anytime, social, mobile, and collaborative, and focused more on results rather than place and time?

Do you foresee that changes in the workplace will mean changes for the division of family roles, so that work is accomplished AND the functions and responsibilities of the family to children, couples, and the family as a whole are fulfilled?

Consider the critical post question #1, above. In light of possible changes ahead for families, how do we advocate as professionals for family time, communication, connectedness, engagement, and presence to respond and attend to the needs of growing children?

In the Families and Technology course, students tracked 12 hours of their personal technology use and analyzed what that use meant to their personal well-being and relationships. Many identified mixed feelings — that it was valuable to their school work and personal lives but was also a significant source of distraction. Many reported that they felt that they were addicted, or at least that they'd become dependent on technology. As we consider boundary blurring and work and family, consider what this means for you in the future. What steps will you take to find necessary boundaries that help you maintain a healthy balance? Student lives in school add on to or mimic

lives with full-time work. This is a good time to thoughtfully consider intentional technology use for your future as a working family member.

View this video interview with Simon Sinek: Millennials in the Workplace .

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://open.lib.umn.edu/technologyfamily/?p=306#oembed-1

He draws conclusions on millennials in the workplace based on four factors, and makes recommendations for us as a society and for employers. Share your reaction to the video. How does Sinek's perspective about your generation leave you feeling? Do you agree/disagree? What do you think about his recommendations? Are they fair? Would we expect workplaces to accommodate to millennials as workers? What expectations should workplaces place on individuals?

- Or, see this more recent video from Simon Sinek on the current situation and the realities for workplace innovation: These Are Not Unprecedented Times | Simon Sinek
- What are your thoughts? How might Sinek's words be evocative for universities as well?

9.5 ADDITIONAL RESOURCES & READINGS

News Articles in Popular Press/Newspapers

- **8 Ways to set Boundaries between work and kids** (Leah Cherinikoff, New York Times, April 9, 2020): https://nyti.ms/2UWEjo4
- **The Guardian (10/2018):** The loss art of concentration. https://www.theguardian.com/lifeandstyle/2018/oct/14/the-lost-art-of-concentration-being-distracted-in-a-digital-world
- BBC Worklife (6/2022): The people who hate working from home: https://www.bbc.com/worklife/article/20220616-the-people-who-hate-working-from-home
- Salon (2016) Plugged in and Stressed Out. Technology is Killing work life balance.
- Men's Health (2015). 12 Signs you need to stop working so much.
- The Digitalist (2017): The Future of Work: How the Workplace is Changing in 2017
- Is the Coronavirus Shaping the Future of How We Do Work? (Miriam Pawel, New York Times, March 21, 2020): https://nyti.ms/2UmM3yt
- Remote work is failing Gen Z: https://www.nytimes.com/2021/11/22/opinion/remote-work-gen-z.html
- Center for Creative Leadership (2015). Always On, Never Done**:** https://www.shrm.org/hr-today/news/hr-news/Documents/AlwaysOn.pdf

Research and Theory articles Related to Work-family Balance and the Role of Technology

- Nam (2014). Technology Use and Work-Life Balance. Applied Research Quality Life (2014) 9:1017–1040 DOI 10.1007/s11482-013-9283-1
- Clark, S. C. (2000). Work/family border theory: A new theory of work/family balance. *Human relations*, *53*(6), 747-770.
- Carvalho, V. S., Santos, A., Ribeiro, M. T., & Chambel, M. J. (2021). Please, do not interrupt me: work–family balance and segmentation behavior as mediators of boundary violations and teleworkers' burnout and flourishing. *Sustainability*, *13*(13), 7339.
- Ferguson, M., Carlson, D., Boswell, W., Whitten, D., Butts, M. M., & Kacmar, K. M. (M.). (2016). Tethered to work: A family systems approach linking mobile device use to turnover intentions. *Journal of Applied Psychology, 101*(4), 520–534. https://doi.org/10.1037/apl0000075

Towers, I., Duxbury, L., Higgins, C. and Thomas, J. (2006), Time thieves and space invaders: technology, work and the organization, *Journal of Organizational Change Management*, Vol. 19 No. 5, pp. 593-618. https://doi.org/10.1108/09534810610686076

- Uddin, M. (2021). Addressing work-life balance challenges of working women during COVID-19 in Bangladesh. *International Social Science Journal*, *71*(239-240), 7-20.
- Wilkinson, S. (2022). *Smart-Device Use in a COVID-19 World: Exploring Work-Family Conflict, Turnover Intentions & Wellbeing* (Doctoral dissertation, Auckland University of Technology).

CHAPTER 10: TECHNOLOGY USE IN FAMILY HEALTH AND MONEY MANAGEMENT

10.1 TECHNOLOGY USE IN FAMILY HEALTH AND MONEY MANAGEMENT

It is easy to sit up and take notice. What is difficult is getting up and taking action.

—— Honore de Balzac

Chapter Insights

- Security, safety, privacy, and compliance with policies and regulations are concerns in managing both health and finances through the internet and with digital applications. These can be potential threats to family well-being.
- Applications offered to help families manage finances and/or health care may widen the digital divide.
- Personal expression and the sharing of information about one's health have become popular, particularly through blogs, video channels (e.g., The Clarity Project), and health apps. Such sharing of personal health experiences has pros and cons.
- Telemedicine has become popular, particularly in the aftermath of COVID-19. There are benefits and possible concerns of telemedicine (or telehealth).
- Apply the criteria of USE (easy to use, safe, effective) to the selection of health care information and financial apps. Consider how easy guidelines like acronyms might be helpful to family members and consumers.
- Among other household expenditures, technology has become a stable and increasingly costly item. Given a list of categories for tech spending, calculate your average monthly and yearly cost of technology. Consider how your own costs compare with others (to identify factors that go into our technology spending, such as sharing passwords to streaming

services or free printing). Consider too how your costs compare to other major expenditures, such as college tuition, to gain perspective about family households' tech spending burden.
- The use of apps like Venmo for money exchange has become popular, as have mobile apps for banking and investments. While these make money exchange and budgeting easier, they also introduce certain risks.
- A family is responsible for teaching children about money management. This can be done by giving an allowance, paying for chores, or setting up a savings account or a spending card. Consider recommendations to help families identify apps that are effective, engaging for children, age-appropriate, and safe.
- After reading this chapter, identify what you feel inspired by, the questions that remain for you, and the steps you can take for your own technology use to be more intentional.

Introduction

Without a doubt, ICTs have made it easier for families to search for information and manage data on health and finance, and communicate with related professionals. Looking for a clinic, resolving a question about a child's health, accessing health records, and making visits to a doctor can all be done online or through an app. Similarly, finding information about investments and retirement savings, accessing bank records, mapping the closest ATM, and even sending money to another person can be done with a few clicks. In this chapter, we briefly explore the range of applications and devices families use to manage their health care and finances, and identify ways in which such use can be positive for individual well-being yet have family impacts as well.

As we consider these topics, we are reminded of our key consideration of equity and access. The digital divide,

with its unequal access to digital tools and the internet, can also affect the ability to keep records, complete transactions efficiently, communicate with professionals, and manage information. Technology literacy (or e-literacy) also influences comfort with using ICT effectively and safely. For example, in 2017, Perezcki et al. determined that, although a large urban health care system offered a patient portal, the majority of adults didn't use it. Use was even lower for racial and ethnic minorities, those with lower income and education levels, and, particularly, those without neighborhood internet access. Families in rural areas similarly face challenges with accessing health information online (Choi & DiNitto, 2013).

As we consider ICT's role in aiding our health care and money management and spending, we are reminded that unequal access to digital tools and the internet present challenges, resulting in less efficient record keeping, inefficient tranactions, and the inability to quickly access medical information and more.

Information on personal and family health and money can be deeply private and sensitive and require confidentiality. For this reason, HIPPA laws (Health Insurance Portability and Accountability Act) were put into place as the internet became more publicly available. Financial data, too, is subject to invasions of privacy and security threats. In 2017, a data breach at Equifax risked credit information on 145 million individuals (including the author). The sensitive data shared included names, social security numbers, addresses, and dates of birth. While for most users there were no serious consequences, the breach did mean that when the immediate fix was to block credit details, individuals later faced challenges in obtaining their own credit information. There is also evidence of the breach's impact on children (Kim & Capitani, 2017). One family discovered that their 7-year-old's information was affected, which led them to wonder about the challenges they would face if their Social Security number was exposed.

Family professionals can help families gain basic understanding and comfort using digital tools to manage and understand money and health care. They can also advocate for the full range of families to have equal access to the internet and digital technologies, and to the same efficiencies and opportunities afforded to others. Because privacy and safety are so central to the topics of money and family health, we reinforce our critical lens on technology use by beginning with a focus on this issue.

Privacy and Safety of Information and Data

Privacy and online safety are major issues facing everyone who uses the internet. With regard to family privacy, inclusive

of workplace influences, Ollier-Malaterre and colleagues (2019) note:

> technology amplifies the blurring...also because the very definitions of what is public and what is private are under scrutiny: Information shared on social media, for instance, is sometimes deemed by scholars and lawyers as private and sometimes public.... In an era in which putting up curtains on windows and planting high trees around houses no longer suffices to safeguard privacy, many new questions for individuals arise about privacy, visibility, and surveillance that societies or collective actions may at some point strive to regulate. (p. 435)

Data security breach by Blogprenteur CC2.0

The use of online technologies enables telecommunication companies' access to personal data, data that can be sold to market products to individuals and create a digital footprint that individuals and children have no control over.

These issues are particularly critical for families. Sharing accounts and information is common within relationships, so compromises to identity, privacy, and security can easily threaten others. And the economic consequence of shared credit card information or an individual's identity theft on the whole family can be devastating.

These are also family-centric concerns, as it is within the responsibility of parents to oversee children's safety online and to teach children how to protect their privacy and use sites that adhere to child-protective policies. As noted in Chapter 5, children's level of development and emerging abilities to reason through online threats can leave them vulnerable. COPPA laws that protect children's privacy extend to sites also interested in engaging children around health and money issues.

This brief overview suggests that the impacts of data security and sharing can be individual or family-wide, and can affect organizations and whole governments. Actions for safety thus fall in the personal, policy, and system levels. Because the issue of cybersecurity is so large, it is beyond the scope of this chapter or book to cover it in detail. Rather, we provide an overview of the various elements that comprise cybersecurity, their potential impacts, and the personal and regulatory steps that can be made. This is an ever-expanding topic as new forms of hacking (e.g., ransomware) and data chains are developed. Readers are encouraged to explore some of the sources in the Additional Resources section or do a search for information on topics of interest in this area.

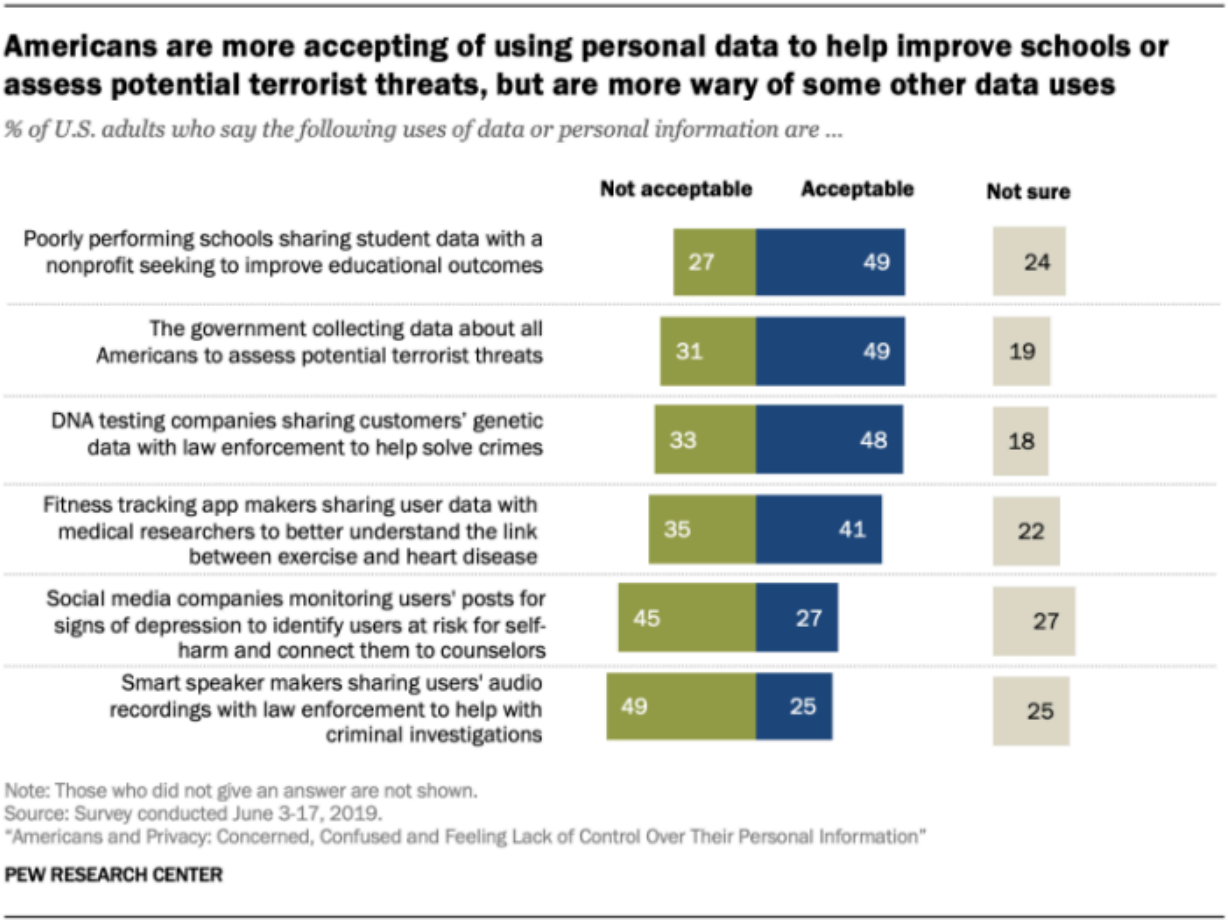
Dimensions of online safety

There are four dimensions of safety online, as summarized by Commonsense Media:

- **Safety:** Protection of personal accounts and information from hackers and others to protect physical and emotional well-being.
- **Privacy:** Data is often collected to be used for marketing and targeting and personal sharing.
- **Security:** Protecting the integrity and confidentiality of a person's data.
- **Compliance:** Adherence to existing laws and regulations.

Relatively recent data suggests that most Americans feel that their online data is not secure. A 2019 report by Pew indicated that 62% of those sampled reported that it is not possible to go through daily life without having their data collected by companies; 63% report this for government sites. What's more, in most cases two-thirds or more are concerned with how the data is used and that the consequences of gathering the data outweigh the benefits, and more than half have little to no understanding of how the data is used, particularly by the government. There is a more generalized understanding of the commercial use of data to track interests and user demographics for the purpose of making life "easier." (For those curious, the Pew report includes a section explaining data uses by the U.S. government.)

Yet although we are concerned, few of us object or don't "agree" when asked when website popups solicit compliance about their data use policies. Likely, we are daunted by the long texts of legal information — in the Pew study, 63% say they understand little or nothing about laws to protect data privacy — or simply don't want to take the time to read it all. And opinions are mixed when it comes to the purposes for identifying types of data. While many object when a social media site tracks posts about depression, few object that a school would sell information about poorly performing students to a nonprofit company that supports learning. This graphic from the report indicates views on a range of ways in which data is used. If you were part of the sample, would you find these topics of data sharing acceptable or unacceptable? If you're not sure, what could help you know?



https://www.pewresearch.org/internet/2019/11/15/americans-and-privacy-concerned-confused-and-feeling-lack-of-control-over-their-personal-information/

Identity theft

Want to check your own knowledge of cybercrime? Take this quiz.

Identity theft is a specific privacy concern, and according to the 2019 Pew study, more than one quarter (28%) of Americans report experiencing one of three types of issues: fraudulent charges on a credit card, someone taking over their identity on social media, or someone trying to get a loan in their name. A student at the University of Minnesota related a harrowing experience with identity theft when a smartphone was stolen during a personal theft and assault. The assailants forced the individual to share the phone's passcode and AppleID, which enabled access to a variety of apps. This included Venmo (discussed later in the chapter). Requests for money from members of the contact list, and charges on accounts available through apps on the phone, led to hundreds of dollars being stolen. More information on cybercrime can be found here.

Cyber safety

"Cyber Security – Hacker" by perspec_photo88 is licensed under CC BY-SA 2.0.

Digital applications and websites are subject to compliance with laws and regulations that fall into the general category of cyber safety. Cyber safety is a term for "the collective mechanisms and processes by which valuable information and services are protected from publication, tampering, or an assortment of unauthorized activities that are planned and implemented by untrustworthy individuals or unplanned events. Chapters 4 and 5 discussed safety online, particularly for individuals who are stalked as the result of using a dating app or for children who may be victims of cyberbullying. Privacy and security concerns include those discussed above, when a person's data is shared for marketing or when data sharing breaches confidentiality. The COPPA laws intended to protect children's privacy, discussed in Chapter 5, address some of these concerns.

Various laws are in place to protect security and privacy: https://privacy.commonsense.org/resource/evaluation-statutes. As this page explains, compliance includes regulatory, internal, and corporate compliance. Regulatory compliance is a site's compliance with all available laws, rules, and regulations. HIPPA's strict practices, in part, standardize health information and protect patient privacy, and penalties for non-compliance can include federal penalties and legal action. Internal compliance ensures that a site remains in compliance with federal and state laws.Industry compliance includes employee practices that safeguard data use.

Individuals and families can safeguard themselves when using the internet by being aware of the extent to which sites adhere to policies and regulations. Sites provide this information, though it can be buried and found only in links in small print. One superlative example from 1440.com; note how it explains what is collected, why, and how: https://join1440.com/privacy-policy/.

Data trends for 2022 indicate a variety of mechanisms to ensure web security (Marr, 2022). These can operate on large systems levels to protect against hacking breaches such as the Equifax incident, and can include practices for individuals to protect their data security. AI-powered cybersecurity, with its predictive ability to anticipate and monitor crime and threats from ransomware (which infects devices with a virus that locks files that will be destroyed without payment), leads companies to step up employee education efforts. This education warns employees not to open certain files or attachments, and to be aware of attacks on the Internet of Things (or those devices, such refrigerators and laundry machines in a house, that are connected to a network), cyberattacks in interconnected company data systems (the Forbes piece notes that "by 2025, 60% of organizations will use cybersecurity risk as a 'primary determinant' when choosing who to conduct business with"), and advancements on regulatory policies and practices.

Health Information and Care: Use of Technology in Personal and Family Health

The use of the internet and digital applications can have impacts on individuals — with indirect value to others in the family — and on whole families. With an estimated 39% of adults serving as caregivers, and with caregivers more likely to seek information about health online than other adults, societal interest in ICT and health extends beyond the individual. During the COVID-19 pandemic, the majority of Americans used the internet to arrange vaccine appointments for themselves or another person (McClain et al., 2021). Reviews of technology used for individual and family health fall into the following categories:

This video discusses security concerns in the healthcare industry.

One or more interactive elements has been excluded from this version of the text. You can view them online

1. Web sites with health information.
2. Social support and exchange of information on social media, discussion forums, YouTube channels, and more.
3. Applications for the management of disease, as a complement to interventions, and for monitoring personal and family health.
4. Wearable technologies for health data management, such as Fitbits and Apple Watches.
5. Health care services delivered via technology (e.g., telemedicine) and the purchase of medical devices and pharmaceuticals.
6. Robotic devices that provide emotional support and relieve stress in conditions such as dementia.

here: https://open.lib.umn.edu/technologyfamily/?p=396#oembed-1

Reviews on individual conditions with clear family implications — such as dementia and eating disorders — provide useful information on the various ways that technology can be used to aid and assist (though sometimes challenge) health and recovery. As these are discussed below, consider how their use may impact the individual and have direct or indirect impacts on the family. Consider too what concerns may arise. For example, wearable technology collects massive amounts of data on individual health behavior and physiological conditions . This can inform health care practitioners in ways that mean more accurate reporting and diagnosis, but it can also mean data exposure and the need for protection from privacy violations (Cilliers, 2020). And while purchasing prescriptions online can be efficient and convenient for those homebound or in rural areas, recent reviews of online drug providers finds that consumers show be wary. Providers were found to pair drugs with services not designed for long-term support, or to enhance prices to capitalize on convenience.

Information about health online

For better or worse, the internet has become a significant source of information about health, illness, disease prevention, and recovery. Prior to the availability of the internet, individuals sought out health practitioners for information, turned to trusted others (e.g., family or friends), or sought written materials or audiovisual

media in libraries. Tan and Goodawardene (2017) observe possible consequences of the change. These include exposure to information that is of questionable quality, requiring, as will be discussed later in the chapter, a critical eye in discerning accuracy and usefulness. Patients may be misinformed and incorrectly self-diagnosed, which might keep them from visiting the doctor. Some may feel less satisfied and less trusting of the physician, which may even lead to arguments and conflict. Yet the review of the literature did not indicate weaker relationships between patient and doctor due to the availability of health information online. Indeed, they found that more informed patients may ask doctors more questions and take greater agency in their health care and management.

With the availability of information online, individuals can access a wide range of sources, compare facts, tailor the information to their specific interests, and determine whether to seek medical care or treatment at home. While there may be consequences, informed patients may take greater agency in their health management.

Social support and information exchange

"Facebook Overdose" by mkhmarketing is licensed under CC BY 2.0

The ability to learn about health conditions from others' personal experiences is a major advantage of the internet. Early research on families and health online came from the mental health community, when parents of children with mental disabilities exchanged information through discussion forums (Scharer, 2005). Significant research has since explored the emotional and informational support benefits of these exchanges as parents, caregivers and individuals find others who share similar experiences, though they may not be known personally or have access in real life. From discussion forums to social media pages, to health and mental health care advocates, to condition-specific applications, ICT has expanded reach to information, and enabled personal relationships and connections for direct support.

Applications for caregivers of those with dementia have demonstrated particular value. Shu and Woo's 2021 review of the literature indicates that people use the internet to diagnosis dementia. In-home technologies serve to support seniors living alone and offer support to caregivers of dementia patients, and social media and YouTube offer education on dementia that is valuable to patients and caregivers alike. Yet research suggests

that internet use by the elderly greatly depends on the perception of value, comfort, and skill in using social media for learning.

Online groups have also been identified as valuable for patients with eating disorders (Howard, nd), providing valuable peer-to-peer support for positive recovery and emotional encouragement. And in some cases, hard-to-diagnose diseases have been addressed through facilitators like Dr. Lisa Sanders' column Diagnosis in the New York Times and dramatized on Netflix.

While the internet has expanded access to information about an illness such as cancer (VanEenbergen et al., 2020) or schizophrenia (Hswen et al., 2020), or about a medical condition one is attempting to prevent (e.g., diabetes, Sauder et al., 2021), concerns have been raised about the potential for false information that might lead to mistreatment of the condition, exacerbation of symptoms, mental health consequences, or worse. Many online influencers and groups are neither sponsored by a medical or health care agency nor facilitated by a professional. While discussion of treatment modalities and new research is positive for learning, moderation can help the conversation stay positive and constructive for all involved.

One example of how social media can influence health information is a study of children's perception of the dangers of nicotine, examining children's exposure to the e-cigarette "Puff bar" through 148 TikTok videos in 2020 (Morales et al., 2022). The videos had been collectively viewed over 137 million times. Elements of content regarding the cigarettes included skits and stories, shared vaping experiences, product reviews, and promotions and crafts. The researchers identified viewer apathy to the effects of nicotine with repeated exposure to the content. They noted that, "For adolescents, more time spent on social media is associated with greater intention to use e-cigarettes, and exposure to and engagement with tobacco-related content have been associated with positive attitudes, norm perceptions, and intentions."

A 2020 study examined children's exposure to e-cigarettes through TikTok videos. Researchers identified viewer apathy to the effects of nicotine through repeated exposure. Instead tobacco-related content was associated with positive attitudes and intentions.

Self-authored blogs, social media pages, and video channels are also ways that individuals share and consume health information. For many, these offer deeply personal mechanisms for sharing and taking part in others' experiences. For example, the Clarity Project [1] was a YouTube channel offered by Claire Wineland. She was a teenager who had cystic fibrosis, and her videos shared her daily experiences of living with the disease. Sadly, she passed away in 2018 during recovery from a

1. View a documentary about Claire's advocacy, and see videos from her channel.

lung transplant. Before her death, she had amassed tens of thousands of followers and become an advocate for those living with a chronic medical condition. Here's a sample video journal:

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://open.lib.umn.edu/technologyfamily/?p=396#oembed-2

Health care management

Apps and other technology that detect falls or gas and carbon monoxide leaks can reduce concerns for persons with dementia. Other apps can track medication use and offer reminders to aid compliance. Recovery apps for illnesses such as alcoholism or eating disorders offer mood check-ins, mindfulness tips, constructive monitoring of eating and exercise, and ways to identify triggers.

Readers may be interested in seeing the details of this clinical trial for an app that aids those with anorexia nervosa after intervention. As there is a significant rate of relapse, the app is intended to optimize clinical service done face-to-face and improve treatment response. The web page includes descriptions of measures used by the researchers to assess use and usefulness of the app, and clinical details of the patient's condition, thus pairing technology use with the condition it seeks to aid.

Yet such health management apps appear to be primarily focused on the individual, not those providing assistance and support. Grossman and co-authors (2018) acknowledge that of the hundreds of thousands of medical apps available, few address caregiver needs. Only 18%, for example, offered stress reduction activities for caregivers.

Wearable technologies

Wearable technologies provide ways to monitor body response and can send information to health care practitioners. Fitbits and similar products can also be used by individuals with dementia (Shu & Woo, 2021), providing fall detection and information on sleep, physical activity, heart rate, and arrhythmia that can guide physicians in care plans.

Image by Create Health, CC BY 2.0

Although research is limited on the effectiveness of activity trackers and wearable technologies for full family health, there are positive indications. This Australian study by Shoeppe et al. (2020) tested physical activity gains in the family after each member wore a fitness device for 12 weeks. In this study, the whole family included both parents and at least one child age 9–13. In addition to fitness trackers, family members also used a tailored app to align with the device, information on recommended activities, and a motivational poster, and received motivational texts up to three times per week. Measuring outcome by the number of steps, all family members showed significant gains. The researchers focused on the value of family dynamics (e.g., parental role modeling, consistent communication) and reciprocal motivation (e.g., family members acting as agents of change) as likely influences on family member success. Although the study is limited by the number of participants and the lack of a control group, the authors suggest that it indicates promise for whole family health. These devices, however, are also subject to data breaches (Cilliers, 2020).

Telemedicine

As this piece in Everyday Health indicates, the American Academy of Family Physicians (AAFP) defines telemedicine as "the practice of using technology to deliver medical care at a distance, over a telecommunications infrastructure, between a patient at an originating site and a physician or other licensed practitioner at another site." This is different from telehealth, discussed above, which includes the use of "electronic and telecommunications technologies that support a variety of remote healthcare services, such as medical, health coaching, and education services."

As would be expected, the use of telemedicine rose during the COVID-19 pandemic. When physicians' offices were used to treat individuals with the virus and stay-at-home orders kept families inside, one's home became a preferred location for the delivery of care. Seivert and Badowsk i (2020) indicate the benefits of telemedicine to the individual, the provider, and the health care system. Individual benefits include access to medical professionals beyond traditional hours, cost savings, and travel reduction. For professionals, benefits

include travel and cost efficiencies, care provided to hard-to-reach areas, such as rural territories, and increased practitioner satisfaction. For health care systems, telemedicine offers the ability to expand service beyond time and place boundaries, decrease staff burnout, and reach underserved populations. Additional benefits enable professionals to provide caregiver support, and monitor patient vital signs and compliance.

Yet there are barriers and drawbacks to telemedicine. Staff members need training to deploy telemedicine effectively and ethically. Some individuals/patients are concerned with privacy or interruptions by others, may be challenged with access to the internet or in comfort with using a range of applications, or are less comfortable talking over the internet. When others are nearby, some individuals may feel reluctant to talk about health or mental health concerns.

Robotic devices

Robotic Devices: Paro, the therapeutic robot seal pup. Image by Nemo's great uncle, CC BY-NC-SA 2.0

One avenue with promise for health care, particularly for those living with dementia, is robotic products. As indicated in the table in this article (Shu & Woo, 2021) robots can be fashioned as animals (e.g., otter, seal) or humanoids, and holding the robot can offer relief from the neurological symptoms and distress of dementia and provide emotional support. These are excellent alternatives when animals are not allowed in medical facilities or there are concerns with allergies. Robotic devices are also used in training health care providers. For example, this video features a robot patient needing a Cesarean section. As you watch, how do you think robots might be beneficial to practitioners in training? Can you imagine any negatives ? Shu and Woo conclude that, while there is promise in robotic devices for family member health care, particularly for those with dementia and Alzheimer's disease, knowledge and assessment tools are as yet unavailable to evaluate specific device use for specific needs. As with other technologies — and as the thread through this book holds — consumers and family members must become knowledgeable enough to make individualized decisions based on personal goals and needs.

Health e-literacy

With the overwhelming number of websites that share health information, plus the exchange of information through social media and from person to person via apps such as WhatsApp, it is up to individuals to

determine whether information is safe and useful. Personal health literacy, as defined by the US Department of Health and Human Services is, "the degree to which individuals have the ability to find, understand, and use information and services to inform health-related decisions and actions for themselves and others."

Evaluating health information online

A helpful acronym USE:

U: is the site easy to use (e.g., to navigate, read, understand?

- Is it an app or device? Or interactive software? Does it do what is it supposed to?
- Are the tools and resources easily readable? In the language needed? With ability accommodations?
- Does it work with other devices or platforms?

S: is it safe? Does it feel secure? Private?

- Is it secure? Does it track your data? How can you tell?

E: is it effective? Does the information provided seem like it's coming from a reputable source? Is the information reasonable to your situation?

- Is it up to date?
- Who provides the information?
- Is the information accurate?

Another health information source from the U.S. government, Medline, offers constructive questions that broadly explore source and quality:

How can I evaluate health information on the Internet?

Asking a few questions will help you decide if you can trust a website. You can usually find most of the answers on the site's "About Us" page. If you can't find information about who runs the website, the site may not be trustworthy, and their health information may be unreliable. Some questions to ask are:

- **Who runs the site?** Can you trust them to provide balanced, accurate information? Trustworthy sites provide a way to contact the owners with questions or feedback.

  In general, you'll find good health information on websites run by:
  - Federal government agencies.
  - Medical schools.
  - Large professional or nonprofit organizations. For example, the American College of Cardiology (a professional organization) and the American Heart Association (a nonprofit) and are both reliable sources of information on heart health.

- **What's the purpose of the site?** Is it to:
  - Inform the public?
  - Sell products or services?
  - Promote the opinions of a person or group?

  A trustworthy website has one goal: To give you good information.

- **Who pays for the site?**
  - **If the site is funded by ads,** they should be clearly marked as advertisements. Watch out for ads designed to look like neutral health information.
  - **If a business pays for the site,** the health information may favor that business and its products.

- **Is the health information high quality?** Good health information doesn't promote one treatment over another. It gives you balanced facts based on research. So, beware of dramatic writing, promises of cures, and claims that sound too good to be true. Those could be signs of a health fraud scam. To evaluate the quality of a website's information, ask:
  - **How is the information selected and reviewed to make sure it's accurate?** Check the "About Us" page to see if the site has:
    - An editorial board of health experts
    - A content review process
    - A selection policy for content
    - Information about their writers' qualifications, which may be listed at the bottom of the articles
  - **Where does the information come from?** The content pages should have links or references to the sources of the information.
  - **Is the information up to date?** Content pages should include dates when the information was written, reviewed, or updated.

- **How does the website use your personal information?** Look for a privacy policy section to see how your personal information will be used. Don't share information about yourself unless you're comfortable with any risks involved.

MedlinePlus: Evaluating Health Information

Organizational health literacy puts the responsibility on organizations to enable individuals to find and use information for health-related decisions.

Health information through social media

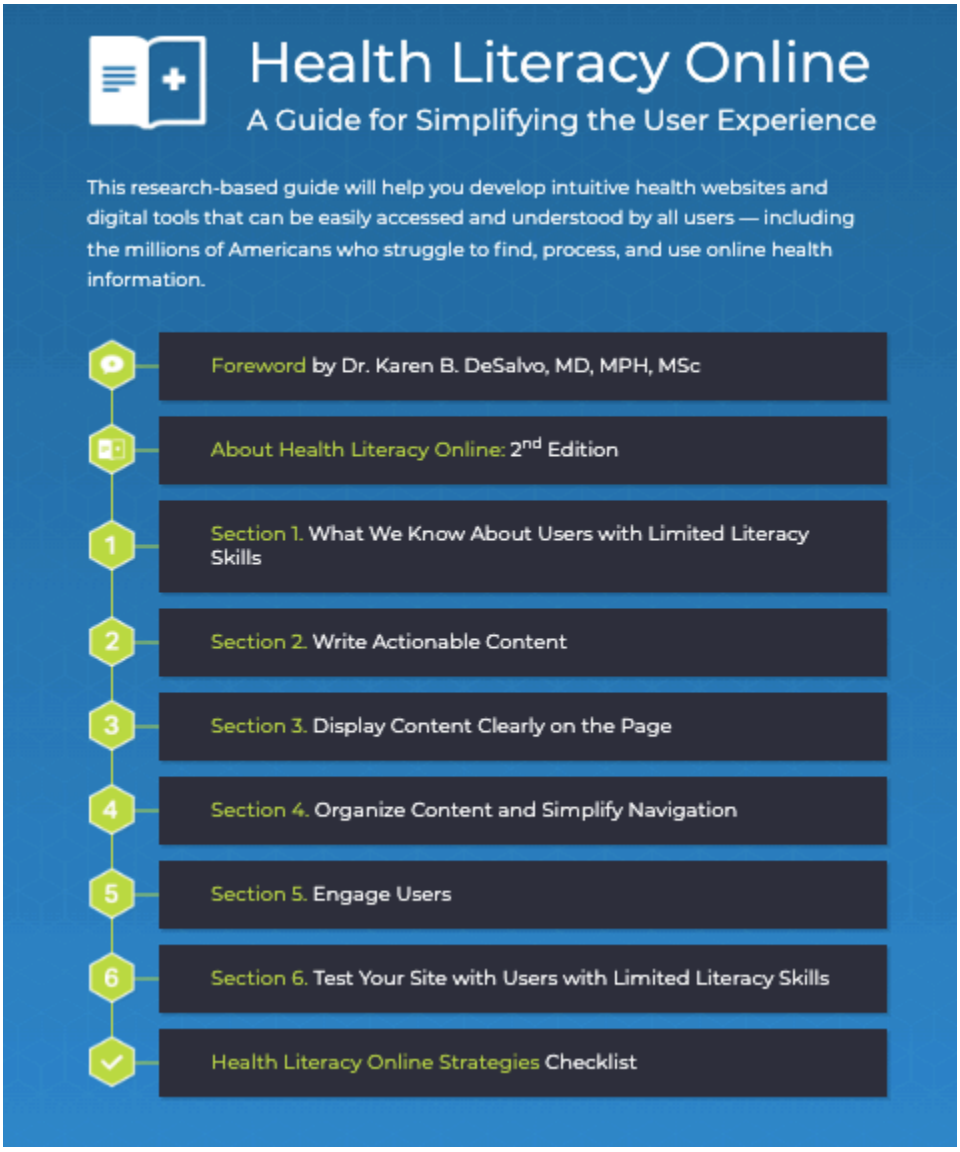
For some, it may be more challenging to determine the accuracy and usefulness of information passed along within a personal social network, including "friends" on Facebook, those followed on Instagram, and TikTok. This video by John Oliver on HBO examines Whats App and the spread of misinformation about COVID-19 and immunizations, especially among family members: As the video indicates, information spread through immigrant communities, with little oversight by the app companies or the government to regulate the sharing of potentially harmful information. A 2021 review of the pre-COVID literature about health misinformation in social media (e.g., up to 2019) by Suarez-Lido and Alvarez-Galvez identified that Twitter was the predominant platform, with the research identifying the following topics (in order of dominance): vaccines, drugs or smoking, noncommunicable diseases, pandemics, eating disorders, and medical treatments. Medline suggests that social media users follow similar questions about the accuracy of health information online, and, when in doubt, that they don't share the information.

Assessing individual health e-literacy

A number of tools are available to help assess an individual's e-health literacy; indeed, a recent search identified more than 200 measures. A resource for identifying tools is at https://healthliteracy.bu.edu/. Health literacy domains of competence range from communication, comprehension, and content knowledge to information-seeking skills and numeracy. Many measures offer Likert scales (e.g., strongly disagree to strongly agree), giving a quantitative number to items that can be summed, averaged, and viewed by subcomponents. Sample items may include:

- I have the skills I need to evaluate the health resources I find on the Internet,
- I can tell high-quality health resources from low-quality health resources on the Internet, and
- I feel confident in using information from the Internet to make health decisions.

One example measure is the All Aspects of Health Literacy Scale (AAHLS), which has 16 items, measures application/function, and takes about 7 minutes to complete. For professionals designing sites (discussed in more detail in the upcoming chapter on family professional application of technology in practice), this health.gov site provides a useful checklist.



Financial e-literacy and U$e of Technology for Family Financial Well-being

As technology has made our families more accessible, efficient, and even healthier, it has also contributed to our ability to manage money and be financially healthy. Think of the many ways in which technology figures into your financial life, and consider how things may have changed with COVID-19. With e-commerce, digital advisory services, e-banking and investing cryptocurrencies, and personal financial management

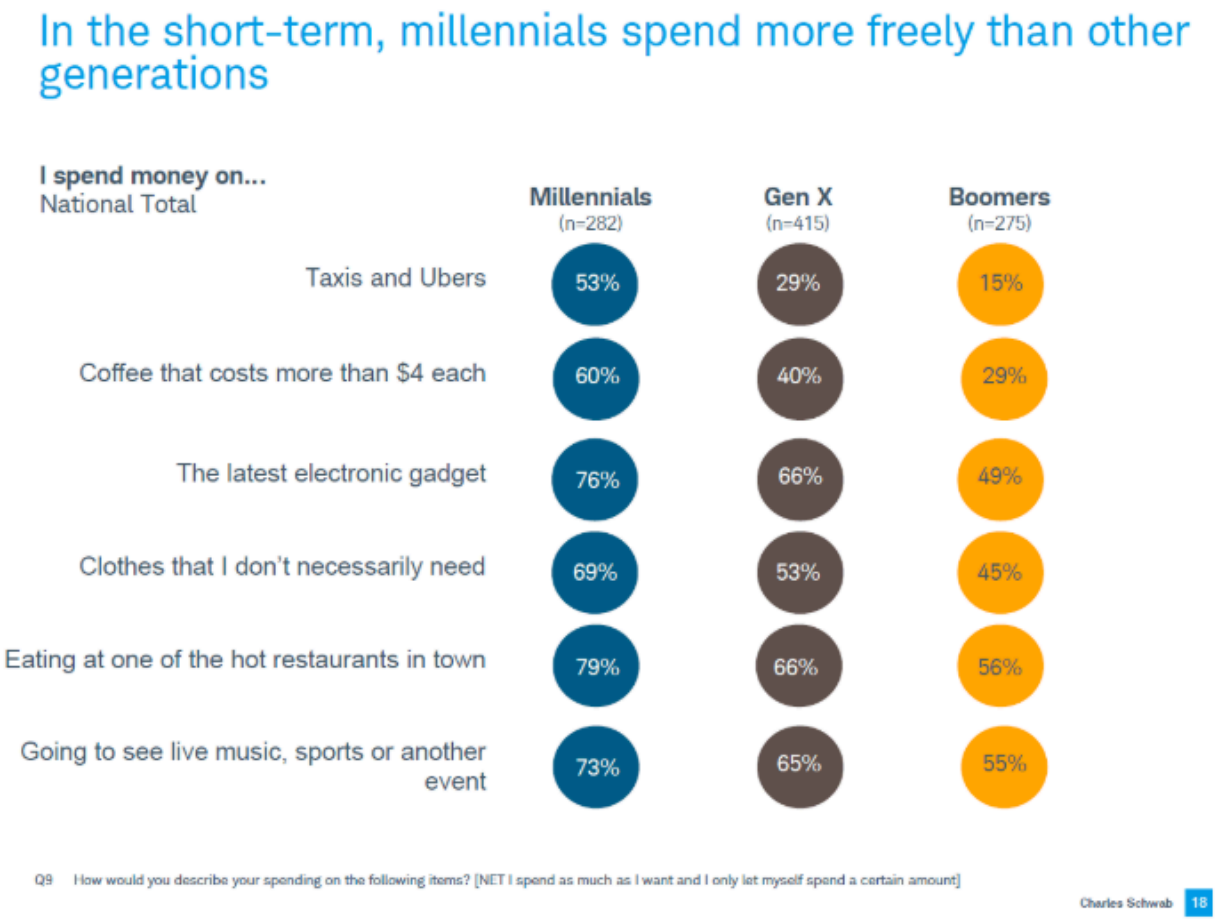
Are we better at managing money in the digital world?
Take a moment to consider your financial life with your smartphone

(PFM) technology (all within the category of fintech) enabling access and exchange without leaving the house, we marvel at the efficiencies in how we shop, earn, spend, and learn about money (and, in the case of families, teach children about money management).

Yet, just as with health-related devices and networked information, using the internet and apps for our money can also expose us in ways that can have serious consequences to our identities, sense of safety and security, and privacy. And as our use of technology has permeated our everyday life, it has become an item in our budgets. As we begin this section, consider your own use of technology to manage your finances and spending. Do you use an app to track financial accounts and perform banking? An app to help stick to a budget, or to make online purchases? Do you go online or use an app to gather information about products and financial matters? Do you communicate with a financial professional through an app or online?

over the course of a week. As you reflect on your actions, what feelings arise? Does using your phone for purchases and money management contribute to feelings of well-being? Does it, for example, reduce stress in some way, because spending and tracking your spending has become more efficient? Might it contribute to your stress in some way? Do you have mixed reactions? Consider your reactions as you continue to read this chapter.

In the Families and Technology course, most students report using an app to track their finances or make purchases. Far fewer maintain a budget, communicate with a professional, or seek information online. Consider your parents or grandparents. Is their behavior using financial apps (or "fintech") different from yours? Research suggests that there are clear age trends in online/tech-aided spending and shopping. Younger generations (e.g., Millennials, Gen Z-ers) are more likely to use digital technologies, and their spending is different as well. As indicated in this graphic from a report by the Medium, Millennials are more likely to spend on events, experiences, and efficiencies than Gen Xers and Baby Boomers.



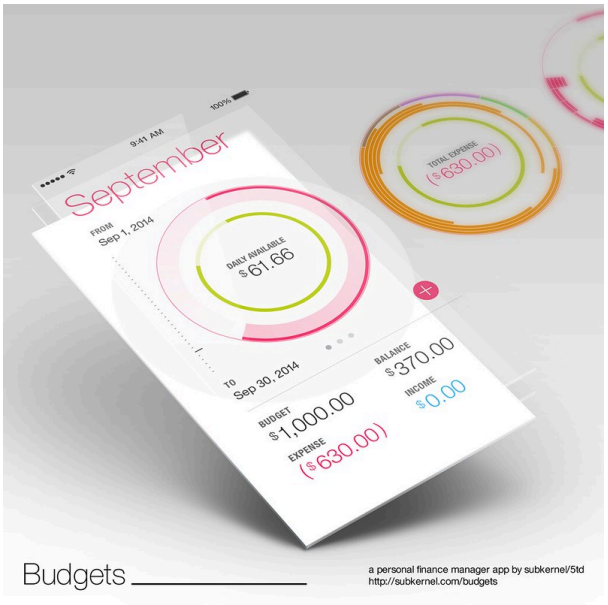
As Lombardo in The Medium observes, "It's not that Millennials care any less about appearing more successful than previous generations, it's that the definition of success has changed. Whereas yesterday it was measured in **things**, today it's measured in **experiences**."

Of the population born after 1996, Emily Pribanic says "Generation Z is a bunch of tech-savvy savers who have all the information and resources they need at their fingertips." Compared with Millennials, Gen Z is less likely to rack up student debt or carry a mortgage, and are more likely to save. They embrace technology for person-to-person money transfers (like Venmo or PayPal) and are active information seekers in making sound financial decisions. The tech-savvy nature of the generation — assured to have grown up with ICT — will demand that banking is mobile, systems are cashless, and apps make financial management efficient.

Use of technology and money management

The growth of fintech, including personal financial management (PFM) technology, has gathered researchers' interest about use, differences in use, and impact. Millennials (those born between 1980 and 1996), for

example, have been studied for how their use of PFM takes the place of more traditional methods (e.g., going to an ATM). PFM includes applications that focus on budgeting (like Mint), credit score monitoring, and personal informatics, used to review balances and overdrafts and to make behavioral corrections to stay financially balanced. It's acknowledged that Millennials have their share of financial considerations, paying off student loans, acquiring stable jobs and income, paying rent (or returning to live with their parents), and saving for retirement. And many don't feel knowledgeable about how to manage their money [2].



"Budgets Glass Levels" by subkernel is licensed under CC BY-NC-ND 2.0.

Walsh and Lim (2020) indicated that PFM use led to fewer fees and penalties and better transparency, which led to more efficient borrowing. Compared with older individuals, Millennials are more likely to use PFM and be considered moderate or heavy users (Walsh & Lim, 2020). Using the Technology Acceptance Model (Davis, 1989), which considers use related to perceived benefit and ease of use, the authors found a relationship with financial pressures, interpreted as the perceived value of using PFM. Heavy adopters' involvement in "side hustles" or working as Uber drivers and similar jobs dependent on technology, offered comfort with using digital applications; the authors interpreted this as "perceived ease of use." And yet heavy adopters were also more likely to experience debt, so the authors indicated that PFM use didn't translate automatically to financial knowledge or skill. Overall, they point to the need to include PFM in a system of financial education and management for Millennials, rather than see it as the mechanism for change.

Cryptocurrency

As Ladrum notes, Millennials have demonstrated their industry by creating an alternative currency. Investopedia defines cryptocurrency as:

> a digital or virtual currency that is secured by cryptography, which makes it nearly impossible to counterfeit or double-spend. Many cryptocurrencies are decentralized networks based on blockchain technology — a distributed ledger enforced by a disparate network of computers. A defining feature of cryptocurrencies is that

2. See, for example, this Forbes article and G Washington study.

they are generally not issued by any central authority, rendering them theoretically immune to government interference or manipulation.

Recent research by the Federal Reserve suggests that 12% of American adults use cryptocurrency (O'Sullivan, 2022). In a 2022 report from T. Rowe Price, 28% of their sample of U.S. adults included cryptocurrency in their investment portfolio. The Federal Reserve report indicates that most of those who use bitcoin (one type of cryptocurrency) do so as an investment; these users tend to have more education and income. A smaller percentage uses it for transactions; these users tend to have less education and income and to be "unbanked" (not having a bank account). It is valuable to keep an open mind and flexible attitude as we learn more about cryptocurrency and its value, particularly given its recent entry into the financial market and for use by families. As Hernandez (2019) writes, there is flexibility with bitcoin and the like that can protect it from the influences of government economies, such as that experienced in Venezuela when inflation affected the value of currency and consumers' ability to purchase or earn money.

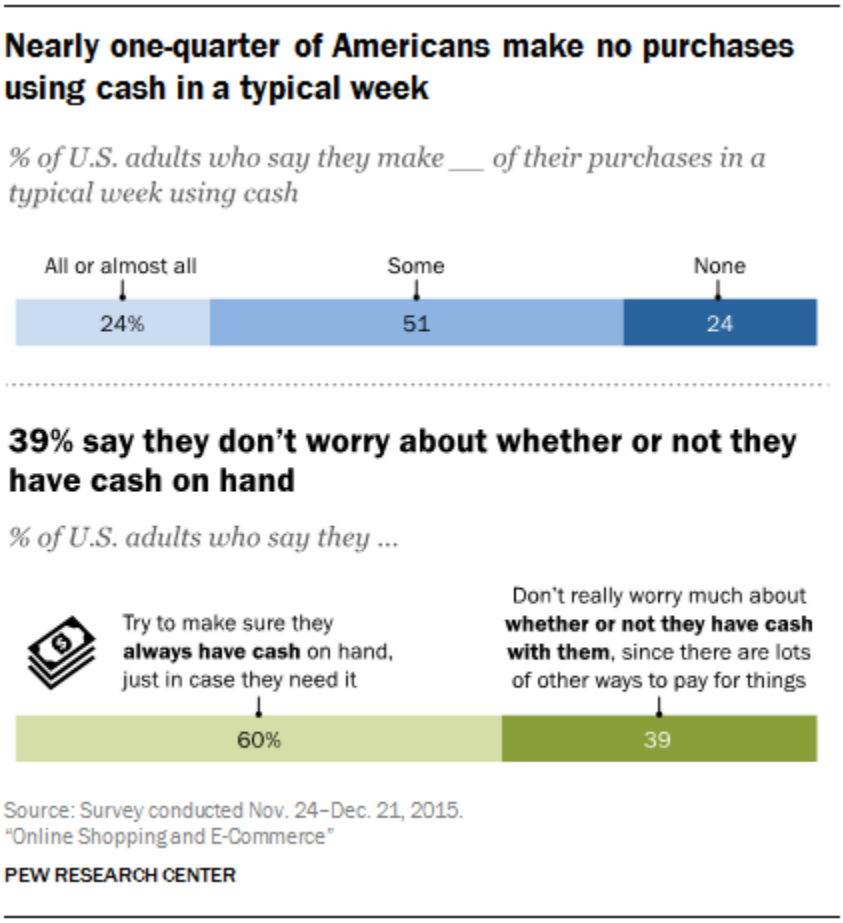
A 2022 report on families and money by T. Rowe Price (2022) indicates that children are interested in cryptocurrency, and that those 11–14 years old are more familiar with it than their parents (57% vs. 47% of adults).

Use of technology and a cashless lifestyle

"From Cash To Digital" by FamZoo is licensed under CC BY-SA 2.0.

Fintech has also revolutionized the ways families spend and share money. We are moving towards a cashless society and relying more on online shopping and delivery services for our groceries and household needs. We exchange money with others without it touching our hands. The shopping experience has radically changed. Age trends in online/tech-aided spending and shopping suggest generational differences in the likelihood of using digital technologies in shopping.

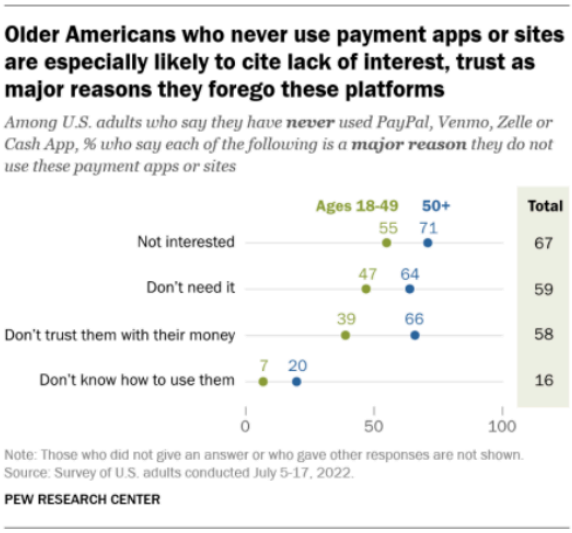
How many purchases do you make during a week using cash? When Pew asked this question in a 2015 survey, 24% of the respondents said none, while half (51%) said some. Each semester this question is put to students in the Family and Technology course. In the spring of 2021, 56% of students said none. While the composition of the sample in the Pew study didn't match those of an undergraduate course, we still see the pattern of change over five or so years, with an increasing number of people reporting that they never use cash.



https://www.pewresearch.org/internet/2016/12/19/online-shopping-and-e-commerce/

Paying without cash is certainly not a recent innovation. Credit for purchase transactions dates back hundreds of years, and electronic credit cards were introduced in the 1960s. Decades of credit card use allow research on consumer behavior, and research shows that not using physical cash for transactions ("friction-free spending") leads to overspending (Schwartz, 2016). ApplePay was introduced in 2014, enabling consumers to load bank information on their phones and make purchases without using a physical credit card.

Use of money-sharing applications like Venmo, Zelle, and CashApp is also growing. Research from Pew in 2022 indicates that about 57% of Americans use PayPal, while approximately 1/4 to 1/3 use other apps. There are clearly demographic differences in use, with older adults less likely to find them necessary, safe, or easy to use, as seen in the figure (Anderson, 2022).



The future of purchasing may include biometrics such as fingerprint sensors. As research develops on these newer forms of a cashless lifestyle, experts believe that the temptation for overspending will only increase.

Online shopping

CC2.0 by MarcoVerch

How often do you shop online? Have your online shopping patterns changed since COVID-19? In 2015, research by Pew indicated that 79% of people shopped online, with 15% saying they shopped online weekly. Greater frequencies were reported for less frequent shopping: 28% said a couple of times a month, 37% said about once a month, and 20% reported never shopping online. In recent years, however, shopping online has become more popular, particularly as more shoppers come from younger generations who are more tech-savvy (e.g., GenZ). During COVID-19, 32% of adults purchased food online from a restaurant, with those age 18–23 years reporting the greatest frequency (53%; Vogels, 2020). Shopping online is apparently driven by hedonistic, normative, and utilitarian motivations (Koch et al., 2020), and during COVID-19, hedonistic motivations for online shopping increased (Koch et al., 2020). This isn't terribly surprising, given the isolation and lack of social contact that occurred during the pandemic.

In the near future, more than half of retail sales will be from online purchases (Balls, 2019). This can mean the closing of small establishments, with impacts on investors in brick-and-mortar businesses, on workers, and on land values.

It is estimated that Amazon netted $18B in sales in 2021 (and didn't pay taxes). Other online retailers reported increases, and brick-and-mortar stores escalated their online sales. Delivery services like DoorDash have also become popular, and small businesses have found success selling through online brokers like Etsy. Yet Balls (2019) observes the downsides to e-commerce, and finds it unsustainable in the long run. He reports that, in the near future, more than half of retail sales will be from online purchases. This can mean the closing of small establishments, with impacts on investors in brick-and-mortar businesses, on workers, and on land values. Balls estimates that delivery costs will increase or be passed along through wage and benefits cuts to drivers, and that additional vans for delivery will negatively impact the environment through carbon emissions. And then, of course, the more business we give to online sellers, the more sharing there is of our personal data and our credit card and bank information.

Technology as a financial consideration in household spending

Household spending estimates frequently don't include technology costs. This article, written as late as 2021, includes a range of household items, and technology isn't mentioned, even under "miscellaneous." This is surprising given our use of personal computers in the 1980s, the introduction of peripherals for those devices, and then the advent of cell phones, smartphones, and wireless technologies in the new millennium. National surveyors have taken notice of the ways in which overall household budgets have been consumed by technology purchases. Consider these categories:

"Setting up the computers & printers & wireless internet" by catherinetodd2 is licensed under CC BY-NC 2.0.

- Internet services and equipment, such as routers.
- Smartphones: devices, calls, content, services, apps..
- Consumer electronics: TVs, game consoles, GPS, paid TV/streaming services, movies.
- Printers: ink, toner, paper.
- Personal computers: laptops, desktops, hardware and software, installation, warranty.

- Handhelds: ebook readers, tablets, smartwatches, fitness trackers, cameras.
- Peripherals: headphones, flash drives, external hard drives, HDMI cables, chargers, cases.

How much do you spend per month and per year on these items? Consider what you'd pay for those items you may get free, perhaps from what someone else pays for (e.g., wifi covered by the University for your dormitory and classrooms) or for what you "bootleg" (e.g., your parents' Hulu account). A Learning Activity for this chapter encourages you to keep track of your technology expenses. They can add up, and be a significant portion of your budget. According to Pew, (McClain et al., 2021), nearly half of broadband users in low-income households say they worry some or a lot about being able to pay for their high-speed internet. Not surprisingly, those with higher incomes worry less.

Financial e-literacy

As with learning about health, digital apps and online resources are valuable for gaining and exchanging financial knowledge and skills. For example, a study by Moor and Kanji (2019) explored women's conversations about money on an online site called Mumsnet. They determined that women use the discussion to clarify social norms about money and relationships, to develop communication skills specific to money through interacting with other women online, and to learn about resource allocation. As discussions about money are a key challenge in many marriages and relationships, finding support from others on how to communicate within a relationship is incredibly valuable.

Yet, as with health information, families need to be wary about the accuracy of information about spending, saving, and investing shared by those online. Social media influencers, bloggers, and web-based scams can promote information that is misleading and possibly dangerous. One recommendation is to ask — again, as one might with health information — who is the source? Is the information credible? Resources such as factcheck.org can be useful as well.

Teaching children about money

Segment their allowance. CC2.0 by TrentD

Children learn how to manage, spend, and save money through modeling and direct lessons from their parents (Serido & Deenanath, 2016; Yeung et al., 2002). A recent report by T. Rowe Price (2022) indicates that parents are the dominant source of trusted information about money; social media ranks second, with 40% of children 11–14 reporting this source.

Experts recommend that parents instill a habit of saving, create opportunities to earn money, help children make smart financial decisions, show them the value of giving, and guide them in the ways their money can grow (Huddleston, 2020). As with other behaviors, a parent's own financial literacy is greatly shaped by experience, culture, and context, and personal perceptions about money (Britt, 2016). And as Chowdry (2019) observes, generational differences in experiences and perceptions of how money is used and understood relative to the digital world can be barriers to parents' choosing and interacting with their children around technology. Yet children are developmentally capable of learning about the basics of savings at a relatively young age (e.g., 5 years). And while families vary greatly in the ways in which they teach children about money (Britt, 2016; Morris, 2021; Serido & Deenanath, 2017), new fintech tools offer promising mechanisms for a cashless, virtual financial world.

Credit/debit cards for children

"Smart" debit cards are attached to an app that allows parents to control the amount of money in the account, and children can use a physical card to make purchases. This makes it easier for parents and children to monitor the amount of money spent, and removes the need for small amounts of cash. For example, if a parent gives their child money for a chore or a weekly allowance, the smart card can be filled. Some apps are designed to be interactive and enable children to dictate different uses of the money, under the traditional save/spend/share. Apps may be designed around doing chores, setting time or date goals for earning and saving, and vary by level of parental control. Scholars appear positive about the use of these applications, as they represent the worlds that children are growing up in and toward, though some raise concerns that app-to-app communication removes the personal interaction that is meaningful for family communication and deeper learning (Carrns, 2018, NYT).

Apps and interactive sites to teach children about money

Financial experts recommend that parents find useful apps and online sites to help facilitate financial literacy (Morris, 2021). Sites like The Mint (themint.org) and Practical Money Skills (practicalmoneyskills.org) offer games for learning about saving, spending, earning, and giving, along with quizzes and calculator tools (Keeley, 2022), while Biz Kids (bizkids.com; bizkids.com [YouTube]) is a TV series featuring teenagers. In usability, learning, and content presentation, the sites consider the age of the child (the Mint, for example, offers information for children, teens, and young adults) and includes other audiences (parents and professionals; Chowdry, 2019). They are often available on platforms and with operating systems that complement the range of devices used, and may be available in languages other than English. According to their website, Practical Money Skills is available in 19 languages and 46 countries.

This chapter closes out our journey through the use of technology (ICT) by families, and what research to date suggests as impacts of use (many impacts beyond the consumer), and the myriad variables that influence those impacts. We now shift gears to examine the professionals who put this knowledge into their practice in their work with families: therapists, social workers, family educators, and more. We'll discover that more than a body of content knowledge, technology are tools for practice. And the great divide among practitioners may exist in access to those tools and in the knowledge and comfort in using them effectively.

10.2 REFERENCES

Anderson, M. (2022). Payment apps like Venmo and Cash App bring convenience – and security concerns – to some users. Pew Research. https://www.pewresearch.org/fact-tank/2022/09/08/payment-apps-like-venmo-and-cash-app-bring-convenience-and-security-concerns-to-some-users/

Balls, A. (2019). Consequences of the online shopping revolution: Ashley Balls examines the future of online shopping and questions whether the present can endure. *NZBusiness*, 33(9), 40.

Brickwood, K., Watson, G., O'Brien, J., & Williams, A. (2019). Consumer-Based Wearable Activity Trackers Increase Physical Activity Participation: Systematic Review and Meta-Analysis. *JMIR MHealth and UHealth*, 7(4), E11819.

Britt, S. (2016). The Intergenerational Transference of Money Attitudes and Behaviors. *The Journal of Consumer Affairs*, 50(3), 539-556.

Capitanini, K. K. and L. (2017, October 18). Kids potentially affected by massive Equifax Data Breach. NBC Chicago. Retrieved July 5, 2022, from https://www.nbcchicago.com/news/local/kids-potentially-affected-by-massive-equifax-data-breach/26333/

Carrns, A. (2018, November 15). How parents teach smart spending with apps, not cash. The New York Times. Retrieved July 5, 2022, from https://www.nytimes.com/2018/11/15/business/children-allowance-apps.html

Centers for Disease Control and Prevention. (2022, February 2). What is health literacy? Centers for Disease Control and Prevention. Retrieved July 6, 2022, from https://www.cdc.gov/healthliteracy/learn/index.html

Choi, N., & Dinitto, D. (2013). The digital divide among low-income homebound older adults: Internet use patterns, eHealth literacy, and attitudes toward computer/Internet use. *Journal of Medical Internet Research*, 15(5), E93.

Chowdhury, A. (2019). Financial Socialization for Digital Natives: A New Way to Teach Children About Money.

Cilliers, L. (2020). Wearable devices in healthcare: Privacy and information security issues. *Health Information Management*, 49(2/3), 150-156. doi: 10.1177/1833358319851684.

ClairityProject. (2014, September 17). Welcome to My Channel – The Clairity Project / Claire Wineland. YouTube. Retrieved July 5, 2022, from https://www.youtube.com/watch?v=jPTty3n1pT8

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of Information Technology. *MIS Quarterly*, 13(3), 319. https://doi.org/10.2307/249008

Frankenfield, J. (2022, May 30). What is cryptocurrency? Investopedia. Retrieved July 6, 2022, from https://www.investopedia.com/terms/c/cryptocurrency.asp

Grossman, M. R., Zak, D. K., & Zelinski, E. M. (2018). Mobile apps for caregivers of older adults: Quantitative content analysis. *JMIR MHealth and UHealth*, 6(7). https://doi.org/10.2196/mhealth.9345

Gal, R., May, A., Van Overmeeren, E., Simons, M., & Monninkhof, E. (2018). The Effect of Physical Activity Interventions Comprising Wearables and Smartphone Applications on Physical Activity: A Systematic Review and Meta-analysis. Sports Medicine – Open, 4(1), 1-15.

Hswen, Y., Naslund, J. A., Brownstein, J. S., & Hawkins, J. B. (2018). Online communication about depression and anxiety among twitter users with schizophrenia: preliminary findings to inform a digital phenotype using social media. *Psychiatric Quarterly*, 89(3), 569-580.

Hernández, C. (2019, February 23). Bitcoin has saved my family. The New York Times. Retrieved July 5, 2022, from https://www.nytimes.com/2019/02/23/opinion/sunday/venezuela-bitcoin-inflation-cryptocurrencies.html

Huddleston, C. (2022, June 10). How to teach your kids good money habits. Forbes. Retrieved July 5, 2022, from https://www.forbes.com/advisor/personal-finance/how-to-teach-your-kids-good-money-habits/#5d3c0bca498c

Keeley, J. (2022, March 25). 10 interactive financial websites that Teach Kids Money Management Skills. MUO. Retrieved July 5, 2022, from https://www.makeuseof.com/tag/10-interactive-financial-websites-teach-kids-money-management-skills/

Koch, J., Frommeyer, B., & Schewe, G. (2020). Online Shopping Motives during the COVID-19 Pandemic-Lessons from the Crisis. Sustainability (Basel, Switzerland), 12(24), 10247.

Lorenz, K., Freddolino, P., Comas-Herrera, A., Knapp, M., & Damant, J. (2019). Technology-based tools and services for people with dementia and carers: Mapping technology onto the dementia care pathway. *Dementia*, 18(2), 725-741.

Landrum, S. (2017, August 7). Millennials, technology and the Challenge of Financial Literacy. Forbes.

Retrieved July 6, 2022, from https://www.forbes.com/sites/sarahlandrum/2017/08/04/millennials-technology-and-the-challenge-of-financial-literacy/?sh=539228e528e6

Marr, B. (2022, February 15). The five biggest cyber security trends in 2022. Forbes. Retrieved July 5, 2022, from https://www.forbes.com/sites/bernardmarr/2021/12/17/the-five-biggest-cyber-security-trends-in-2022/?sh=7aac98c54fa3

Malmgren Fänge, A., Schmidt, S. M., Nilsson, M. H., Carlsson, G., Liwander, A., Dahlgren Bergström, C., Olivetti, P., Johansson, P., & Chiatti, C. (2017). The TECH@HOME study, a technological intervention to reduce caregiver burden for informal caregivers of people with dementia: Study protocol for a randomized controlled trial. *Trials*, 18(1). https://doi.org/10.1186/s13063-017-1796-8

McClain, C., Vogels, E., Perrin, A., Sechopoulos, S., and Rainie, L. (2021). The internet and the pandemic. Pew Research. https://www.pewresearch.org/internet/2021/09/01/the-internet-and-the-pandemic/

Mertan, E., Croucher, L., Shafran, R., & Bennett, S. D. (2021). An investigation of the information provided to the parents of young people with mental health needs on an internet forum. Internet Interventions, 23, 100353. https://doi.org/10.1016/j.invent.2020.100353

MillenniYo! (2019, April 20). The impact of technology on millennial spending habits. Medium. Retrieved July 5, 2022, from https://medium.com/@geraldlombardo/the-impact-of-technology-on-millennial-spending-habits-426f0478ca6e

Moor, L., & Kanji, S. (2018). Money and relationships online: Communication and norm formation in women's discussions of couple resource allocation. *The British Journal of Sociology*, 70(3), 948–968. https://doi.org/10.1111/1468-4446.12492

Morales, M., Fahrion, A., & Watkins, S. L. (2022). # NicotineAddictionCheck: Puff Bar Culture, Addiction Apathy, and Promotion of E-Cigarettes on TikTok. *International Journal of Environmental Research and Public Health*, *19*(3), 1820.

Morris, G. (2021, December 1). Teaching kids to save, Budget & Spend Money. InCharge Debt Solutions. Retrieved July 6, 2022, from https://www.incharge.org/financial-literacy/budgeting-saving/teach-kids-to-save/

Nelson. (2016, March 25). Credit cards encourage extra spending as the cash habit fades away. The New York Times. Retrieved July 6, 2022, from https://www.nytimes.com/2016/03/27/your-money/credit-cards-encourages-extra-spending-as-the-cash-habit-fades-away.html

Ollier-Malaterre, A., Jacobs, J., & Rothbard, N. (2019). Technology, Work, and Family: Digital Cultural Capital and Boundary Management. *Annual Review of Sociology*, 45(1), 425-447.

O'Sullivan, A. (2022, May 31). Fed report shows who's actually using crypto and how. Reason.com. Retrieved July 6, 2022, from https://reason.com/2022/05/31/fed-report-shows-whos-actually-using-crypto-and-how/

Perzynski, A. T., Roach, M. J., Shick, S., Callahan, B., Gunzler, D., Cebul, R., Kaelber, D. C., Huml, A., Thornton, J. D., & Einstadter, D. (2017). Patient portals and broadband internet inequality. *Journal of the American Medical Informatics Association*, 24(5), 927–932. https://doi.org/10.1093/jamia/ocx020

Pribanic, E. (2018, February 28). Generation Z banking: The future of financial marketing. Techfunnel. Retrieved July 6, 2022, from https://www.techfunnel.com/martech/generation-z-banking-future-financial-marketing/?rltd_article

Sauder, K. A., Ritchie, N. D., Crowe, B., Cox, E., Hudson, M., & Wadhwa, S. (2021). Participation and weight loss in online National Diabetes Prevention Programs: a comparison of age and gender subgroups. *Translational Behavioral Medicine,* 11(2), 342-350.

Scharer, K. (2005). An Internet Discussion Board for Parents of Mentally Ill Young Children. *Journal of Child and Adolescent Psychiatric Nursing*, 18(1), 17-25.

Schoeppe, S., Alley, S., Van Lippevelde, W., Bray, N., Williams, S., Duncan, M., & Vandelanotte, C. (2016). Efficacy of interventions that use apps to improve diet, physical activity and sedentary behaviour: A systematic review. *The International Journal of Behavioral Nutrition and Physical Activity*, 13(1), 127.

Schoeppe, S., Salmon, J., Williams, S. L., Power, D., Alley, S., Rebar, A. L., Hayman, M., Duncan, M. J., & Vandelanotte, C. (2020). Effects of an activity tracker and app intervention to increase physical activity in whole families—the step it up family feasibility study. *International Journal of Environmental Research and Public Health*, 17(20), 7655. https://doi.org/10.3390/ijerph17207655

Shu, S., & Woo, B. K. P. (2021). Use of technology and social media in Dementia Care: Current and Future Directions. *World Journal of Psychiatry*, 11(4), 109–123. https://doi.org/10.5498/wjp.v11.i4.109

Schwartz, N. D. (2016, March 25). Credit cards encourage extra spending as the cash habit fades away. The New York Times. Retrieved July 6, 2022, from https://www.nytimes.com/2016/03/27/your-money/credit-cards-encourages-extra-spending-as-the-cash-habit-fades-away.html

Seivert, M. and Badowski, M. (2020). The Rise of Telemedicine: Lessons from a Global Pandemic. EMJ Innov. 2020;5[1]:64-69. https://emj.emg-health.com/wp-content/uploads/sites/2/2021/02/The-Rise-of-Telemedicine-Lessons-from-a-Global-Pandemic.pdf

Serido, J., & Deenanath, V. (2016). Financial parenting: Promoting financial self-reliance of young

consumers. Handbook of Consumer Finance Research, 291–300. https://doi.org/10.1007/978-3-319-28887-1_24

Suarez-Lledo, V., & Alvarez-Galvez, J. (2021). Prevalence of health misinformation on social media: Systematic review. *Journal of Medical Internet Research*, 23(1). https://doi.org/10.2196/17187

Tan, S., & Goonawardene, N. (2017). Internet Health Information Seeking and the Patient-Physician Relationship: A Systematic Review. *Journal of Medical Internet Research*, 19(1), E9.

T. Rowe Price. SlideShare a Scribd company. (n.d.). Retrieved July 6, 2022, from https://www.slideshare.net/TRowePrice

van Eenbergen, M. C., Vromans, R. D., Tick, L. W., Vreugdenhil, G., Krahmer, E. J., Mols, F., & van de Poll-Franse, L. V. (2022). Comparing Survivors of Cancer in Population-Based Samples With Those in Online Cancer Communities: Cross-sectional Questionnaire Study. *JMIR Cancer*, 8(1), e19379.

Vogels, E. (2020). From virtual parties to ordering food, how Americans are using the internet during COVID-19. Pew Research. https://www.pewresearch.org/fact-tank/2020/04/30/from-virtual-parties-to-ordering-food-how-americans-are-using-the-internet-during-covid-19/

Walsh, B., & Lim, H. N. (2020). Millennials' adoption of Personal Financial Management (PMF) technology and financial behavior. FINANCIAL PLANNING REVIEW, 3(3). https://doi.org/10.1002/cfp2.1095

Wolff, J. L., Darer, J. D., & Larsen, K. L. (2015). Family caregivers and consumer health information technology. *Journal of General Internal Medicine*, 31(1), 117–121. https://doi.org/10.1007/s11606-015-3494-0

Yeung, W. J., Linver, M. R., & Brooks–Gunn, J. (2002). How money matters for young children's development: Parental Investment and Family Processes. *Child Development*, 73(6), 1861–1879. https://doi.org/10.1111/1467-8624.t01-1-00511

Linked in text

https://www.cdc.gov/phlp/publications/topic/hipaa.html

https://www.ftc.gov/equifax-data-breach

https://privacy.commonsense.org/

Auxier, B., Rainie, L, Anderson, M., Perrin, A., Kumar, M. and Turner, E. (2019). Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information. https://www.pewresearch.org/internet/2019/11/15/americans-and-privacy-concerned-confused-and-feeling-lack-of-control-over-their-personal-information/

https://www.identitytheft.gov/#/

https://www.techlicious.com/safety-support/

https://cyber.laws.com/cyber-safety

https://privacy.commonsense.org/resource/evaluation-statutes

https://codecondo.com/what-is-cybersecurity-compliance/

https://join1440.com/privacy-policy/

https://www.gartner.com/en/articles/7-top-trends-in-cybersecurity-for-2022

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8040150/

https://www.eatingdisorderhope.com/blog/using-technology-to-support-eating-disorder-recovery

https://www.bbc.com/future/article/20180731-the-new-tech-vocabulary-you-need-to-understand-the-future

https://www.nytimes.com/column/diagnosis

http://www.netflix.com/title/80201543

https://clinicaltrials.gov/ct2/show/NCT05190926

https://www.flickr.com/photos/134647712@N07/34817827783

https://mdpi-res.com/ijerph/ijerph-17-07655/article_deploy/ijerph-17-07655-v2.pdf?version=1603346272

Harrar https://www.everydayhealth.com/healthy-living/your-everyday-guide-to-telemedicine/(Links to an external site.)

https://pubmed.ncbi.nlm.nih.gov/33999718/

https://www.flickr.com/photos/71453924@N00/376487263

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8040150/#B4

https://youtu.be/25hqWUXcDdA

https://youtu.be/l5jtFqWq5iU

https://melmagazine.com/en-us/story/for-immigrant-families-whatsapp-is-a-lifeline-and-a-rare-connection-to-the-worlds-they-left-behind

https://www.mlanet.org/p/cm/ld/fid=398

https://medlineplus.gov/evaluatinghealthinformation.html

https://healthliteracy.bu.edu/

https://health.gov/healthliteracyonline/checklist/

https://www.investopedia.com/terms/f/fintech.asp

https://www.investopedia.com/terms/v/virtual-currency.asp

https://www.investopedia.com/terms/b/blockchain.asp

https://www.investopedia.com/terms/d/distributed-ledgers.asp

https://www.creditcards.com/statistics/history-of-credit-cards/

https://wellkeptwallet.com/common-monthly-household-expenses/

https://squaredawayblog.bc.edu/squared-away/financial-misinformation-shared-online/

https://www.factcheck.org/

http://themint.org

http://practicalmoneyskills.org

http://bizkids.com

https://www.youtube.com/bizkidstv

https://practicalmoneyskills.com/about

10.3 LEARNING ACTIVITIES

Online privacy check

Think your social media site is secure? Commonsense Media offers privacy evaluation of a number of popular sites, along with advice for ensuring online privacy. Check out the page, explore the questions asked in their site evaluations, look at the criteria for pass, warning, and fail ratings, and review the criteria for security testing in categories that include data sharing, device safety, account protection, device security, and software updates.

Then select several sites for evaluation. Type the name in the box "search for a privacy evaluation."

For example, https://privacy.commonsense.org/evaluation/Facebook. As of 2022, it was given a 55% "warning" rating. Read about safety, security, privacy, compliance, and the other factors that this rating is based on. When you apply this evaluation to Instagram, TikTok, or other sites (or games that a family or child might play), what concerns might you have going forward? What might be the "deal breaker" for you in choosing not to continue to use a particular site? Or does it not really matter?

How far can it go? [data tracking and health information]

Threats to the provision of health care, including abortion services, go beyond the availability of doctors and clinics. As this piece from Shira Ovide in the New York Times observes, data trackers will identify the location of individuals crossing state lines, and where abortions and other health care are being offered.

Beyond awareness of this data tracking, what are the recourse for individual citizens' human rights to privacy, safety, confidentiality?

Children and internet safety

Play Reality Check, selecting at least one of the five missions? How might this game be helpful to a 9-year-old child? What about to a 16-year-old, who has a better understanding of internet safety?

Check your spending on technology

In this activity you'll estimate the amount you spend on technology for a month and a year. Using this form, identify the amount of money you spend in each category. This is for you, so be honest and use as much flexibility as you need. The costs include:

- Monthly charges for phone data usage/plans, streaming services, and internet service
- Occasional charges for peripherals (e.g., cords, cases, rentals) and repairs
- Annual costs (e.g., service plans, warranties)
- Major costs (devices, annualized for the expected life; if you purchase a laptop for $1,000 every 4 years, for example, your yearly cost would average $250.)

Once you have the totals, do a sum for the year, and calculate the monthly average.

- Consider how this compares to the amount you spend in other categories. If you spend $2,000 a year on technology and $7,200 a year on rent, your technology costs are 28% of

what you pay for rent. Consider your total yearly expenses, which might include tuition, lodging/rent, utilities, food, transportation, and clothing. What is the portion of your total expenses goes to technology use and access?

- Now consider this amount of money for technology use and access for a single parent with two children living at the poverty level of $21,960 per year. Her household budget will include child care for the two children (on average about $226/week or about $20,000). Consider the many ways in which she'll need to stretch her money; how would she pay for wireless access, a smartphone and data plan, and hardware? If you were in her situation, how could you make the technology dollar stretch?
- You may want to do this activities with others and see how your technology costs compare. What figures into the variation in your costs?

Explore games and apps to teach children about money

Check out "10 Interactive financial websites that teach kids money management skills." Select three of the websites with a child or group of children in mind (most are written for ages 5–18 years). Explore the ways in which children would learn about spending, saving, and earning money. For your child/group of children, would the site be engaging? Why or why not? Does the site invite participation by an adult or other person who could facilitate the child's learning and motivation?

eHealth Literacy scenarios

Watch this video tutorial on evaluating health websites. Then select a number between 1 and 16 and, using the scenarios on this document, go online to find information to help resolve the problem that aligns with the number you picked. You can either a) do a search through a browser like Google, DuckDuckGo, or Firefox and select the first few links offered, or b) intentionally find sites that you think will be useful for your question. In both cases, be sure to identify at least one social media source (e.g., Facebook, TikTok, Instagram).

Eating disorders: A critical perspective on technology influence

The chapter discussed the many ways in which social media, the internet, and applications can be beneficial to those dealing with or recovering from an illness, including eating disorders. On the other hand, those predisposed to developing an eating disorder and those dealing with anorexia, bulimia, overeating, or other conditions may be significantly influenced by negative messages seen online. Explore both sides of the issue, form an opinion, and make recommendations for action. Given our current state and use of technology, do you find it more beneficial or more harmful for eating disorders? What are your recommendations for a) the design of social media platforms and b) use by individuals?

10.4 BLOG PROMPTS

In the chapter we've looked at financial education games for children, allowance and chore management apps for families, and financial management apps (e.g., Venmo). We've also considered the types of health-related questions parents might ask online. Return to those activities, choose one (financial access or health information), and go online to identify at least three different sources. Compare and contrast through the eyes of a parent, and discuss the merits or challenges of selecting a site, app, game, or device.

Check out "10 Interactive financial websites that teach kids money management skills." Offer your thoughts about one or more of the games or apps as a way for children to learn about money. If you were a parent, would you select one or more of these for your child? Would it depend on the child's age? What is your assessment of the game or app?

Finding information on health and using technology to manage finances are both commonplace for families. Yet it can be hard to do. Information searches yield an overwhelming amount of information, and navigating apps for tracking finances can feel scary when families hear about security breaches. All of this is even harder when adults don't speak English, have a disability, or live in highly stressful conditions (e.g., homelessness, abuse). As family professionals, how do we advocate for the health and financial access through technology for everyone?

We've discussed spending on technology, and you've considered how much of your own budget is spent on digital technology and the internet. Consider this for a family. How might spending on

technology cut into a family budget? Look around for guidance on tech spending — particularly important over the holiday season, as technology is a major expenditure. What recommendations would you make to help families keep track of their technology spending online?

10.5 ADDITIONAL RESOURCES & READINGS

Safety Online

- Social media safety: Changing app settings on Facebook
- Commonsense Media
- Cybersecurity quiz: http://www.pewinternet.org/quiz/cybersecurity-knowledge/
- Cybercrime quiz: https://www.cybervie.com/blog/quick-cybersecurity-quiz-how-much-you-really-know/
- Computer Safety and Support (techlicious) https://www.techlicious.com/safety-support/
- John Oliver (HBO) on data brokers (April 2022): https://youtu.be/wqn3gR1WTcA [VIDEO]

Personal and Family Health

- Wearable Technology: Shaping the Future of Your Health Care
- Pregnancy Apps: The New Way to Approach Your Pregnancy
- Telemedicine
  - Harrar (2020): Your Everyday Guide to Telemedicine

Offering and finding health support online (examples):

- Lisa Bonchek Adams' blog: http://lisabadams.com/ (Links to an external site.)
  - Note: Lisa maintained a blog about her cancer diagnosis and family experiences until she passed away in 2015. This is an example of one mother's use of the Internet and social media as a way to express her personal experiences, inform others, and gain support.
- Video: The Clairity Project, by a young woman who posted videos on YouTube to raise awareness about living with cystic fibrosis. Claire developed a large following and became a strong advocate. She passed away in 2018.
  - What It's Like To Be In A Coma (Links to an external site.)

Evaluating health information

- Medline:
  - Evaluating Health Information
  - Evaluating Internet Health Information: A Tutorial [VIDEO]
- health.gov
  - Health Literacy Online: A Guide for Simplifying the User Experience
- Factcheck.org (from the Annenburg Public Policy Center): background science

Personal and Family Financial Well-being

- Household expenses (to estimate portion of technology costs): https://wellkeptwallet.com/common-monthly-household-expenses/
- Garman, E.T., & Forgue, R.E. (2015). Personal Finance, (12th Ed.). United States: South-Western Cengage Learning.
- Solheim, C. A. (2008). Resource management from multicultural perspectives. In Report: Family Focus On ...Resource Management, Issue FF38. Minneapolis: National Council on Family Relations.

Mobile Finance Apps

- Apps to manage finances
- Helpful Links for Money Management
- Budgeting apps
- PC Magazine – Best mobile finance apps: Link
- Money Apps (review by Torey Spangler)

Applications for Children to Learn about Money

- ChoreMonster app: Chore Monster App: A Parent Review [VIDEO]

CHAPTER 11: TECHNOLOGY INTEGRATION IN THE PRACTICE OF FAMILY PROFESSIONALS

11.1 TECHNOLOGY INTEGRATION IN THE PRACTICE OF FAMILY PROFESSIONALS

Even if you're on the right track, you'll get run over if you just sit there.

—— Will Rogers

Chapter Insights

- For family professionals, technology skills and knowledge are critical competencies in the 21st-century workforce.
- Digital citizenship straddles is both a content area for family professionals, and something that must be integrated into practice for ethical and effective delivery of care and services.
- Family professionals' integration of technology is dependent on attitudes toward technology use, attitudes that are based on models such as Davis' (1989) that frame use as related to intention, acceptance and attitude, and perceived ease of use and usefulness. Research with family educators validates this framework and identifies workplace conditions as directly and indirectly related to attitudes.
- Individuals' technological comfort and competence benefit from training that occurs in professional preparation programs and in continuing education. Preparation is often shaped by professional standards of practice inclusive of technology use. Professional standards are present in licenses (e.g., teachers, therapists) and certifications or credentials (e.g., Certified Family Life Educator).
- Family therapists can be guided by organizations such as
    - the American Counseling Association and

    - the American Association of Marriage and Family Therapists, which have standards for ethics, client safety, and confidentiality.
- Family educators can be guided by standards of technology integration
    - for educators in formal settings (such as the International Society for Technology in Education, iste.org) or licensing standards set for teachers at the state level.
    - standards collaboratively constructed by professional associations, including the National Council on Family Relations, the National Parenting Educators Network, and the American Association of Family and Consumer Sciences
- The COVID-19 pandemic greatly impacted family professionals' comfort, use, and innovation in using technology to deliver programming to families. Research with family educators, for example, indicates that tremendous accommodations and innovations were embraced to address the far-ranging needs and preferences of families and children. Supportive resources for professionals greatly facilitate comfort and skill, and address educators' own feelings of isolation and being overwhelmed.
- After reading this chapter, identify what you feel inspired by, the questions that remain for you, and the steps you can take for your own technology use to be more intentional.

Family Professionals

So far, this book has primarily focused on the ways in which families use technology in their lives; the impacts of technology on relationships, human development, and family life; and the research and policy that guides our understanding. But what of the professionals who work with families? In many ways, they are the ones who translate what we know about technology to family members so that the information is useful and meaningful.

"Tirusew Getachew, a Social Worker interviews a young girl who recently deported from Saudi Arabia" by UNICEF Ethiopia is licensed under CC BY-NC-ND 2.0.

Family professionals work full-time in a wide array of fields — as couple/marriage and family therapists; family financial counselors and educators; family and consumer science teachers; Extension educators specializing in home economics, nutrition and foods, financial management, parenting, family life, and more; parenting and/or family life educators, and in family social service administration and coordination. The focus on family-focused professional service is not limited to those whose work is full-time and/or with a title that specifically indicates work with families. In 2017, the author surveyed family educators from several national membership organizations that employ family practitioners (Walker, 2019). Approximately one-fourth of respondents represented fields that would not be traditionally considered "family-first," including clergy, psychologists, teachers, academics, researchers, and business leaders. Key to our focus in this chapter is that practitioners deliver service to families, parents, and children directly in some way, service that may include integrating technology in ways that help enhance individual and family life.

Given family members' use of technology for acquiring information, sharing content, and supporting individual and shared goals, ICT offers an obvious avenue for professionals to reach wider audiences and new methods for effective delivery. Family professionals integrate knowledge about technology as a reality for family life into their practice, and deploy that knowledge when assisting families across myriad issues and interests.

The intersection of family practice and technology is twofold: 1) as a vehicle through which to assist parents and families with learning how to effectively use and choose technology for their children (e.g., technology as a content area for parenting education), and 2) tools and a virtual environment for the delivery of family services, including family therapy, services for families, and parent and family education.

A couples and family therapist, for example, may aid a young couple experiencing conflict over social media sharing or mobile banking, or may facilitate decision-making with families when children are ready to use a smartphone. And they use technology in their practice. The COVID pandemic pushed many family professionals to find creative ways to continue outreach, communication, and service delivery (LeBouw, 2020). This meant adopting social media, videoconferencing, preparing full classes and courses

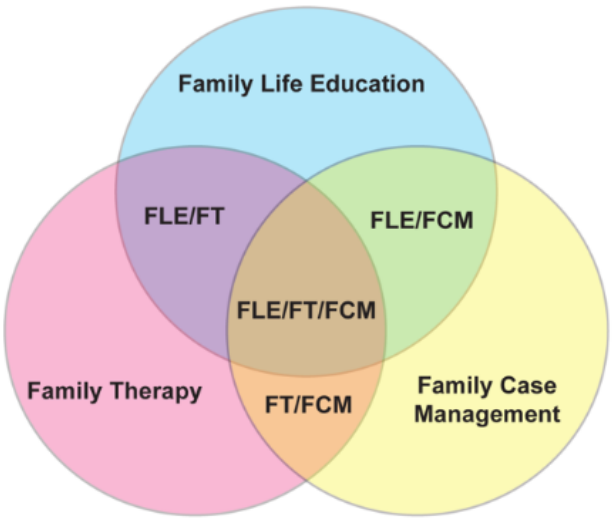
for online environments, and trying out innovations amidst fears around privacy and comfort. The pandemic pushed family professionals further into a phenomenon now present in their practice.

In short, technology use is not a "one-off" topic for family professionals. It is a new reality of family life and for family professionals that requires considerable understanding and critical perspective for professionals' effectiveness with families and their comfort, skill, and competence in engaging effectively and ethically in practice.

This chapter focuses on how family professionals use technology in their work, and on avenues to professional development regarding technology. To that end, it also addresses the forces that promote quality in technology use as an area of family professionals' work, and avenues that provide guidance and support. We begin with a quick look at the intersections of types of family work, then look at the value of using technology in family practice to see how technology can be applied in practice. Then we consider the skills and competencies needed for family professionals in the 21st century, particularly as they relate to integrating technology into practice. This means possessing digital citizenship skills, and the acquisition of these skills. There are three primary avenues to professional development that promote and reinforce (or can act as barriers) to development: pre-service preparation, continuing or professional development, and ongoing workplace conditions. Each of these will be explored, with attention to professional standards and current research. The chapter ends with recommendations on technology integration in family practice.

The Intersections of Family Practice

To best situate technology as both content and delivery in family practice, we begin with a scope of competencies and areas of specialization. Myers-Walls et al. (2011) delineate the boundaries and intersections of family practice across education, therapy, and service fields (see figure below). All dimensions embrace family systems theory, include an ecological context, are sensitive to diversity, follow research-based practice, and hold to professional values. Differences occur in practice specificity — for example, in family education the focus is education and prevention, with an emphasis on normal, healthy functioning. Family therapy features therapeutic intervention, assessment and diagnosis, and psychotherapy. Family Case Management involves family advocacy, meeting family needs and coordinating services. As demonstrated in the figure, each element has overlap with the others. For example, family life education and family therapy intersect through the life course perspective, and encouraging interpersonal relationship skills. Family life education and family case management intersect through family policy (and a solution focus) and in family resource management. All domains intersect through an adherence to family systems theory, and the ecological context, a sensitivity to diversity and marginalized populations, reliance on research-based practice, and values and ethics (if this feels familiar these too are the foundations to this book).



Intersection of Family life education, family therapy and family case management (adapted and used by permission from Myers-Walls, J.)

Family Education

Family educators may work in a specific area, such as parenting education or family financial management, or may be generalists (known decades ago as "home economists"). They may be employed in any range of settings — corporations, nonprofits, religious organizations, hospitals, schools, and local, state, and federal governments. In Minnesota, where the author lives, the Early Childhood Family Education program (ECFE) is offered through all school districts to provide parenting education and early childhood enrichment for all families. The program employs licensed teachers, including those holding state teaching licenses in parenting (Minnesota is the only state that offers a license in this content area). Parenting educators in ECFE work full- or part-time as school district employees, and have bachelor's or master's degrees. More information about parenting educators can be found through the National Parenting Education Network (npen.org). The National Council on Family Relations offers certification in Family Life Education. More about the CLFE can be found at https://www.ncfr.org/cfle-certification .

Family Therapy

In family therapy, intervention is therapeutic and may include psychotherapy. The focus of the therapist's work is short-term and solution-focused. According to the AAMFT website, Marriage or Couple and Family Therapists (MFTs)

> are mental health professionals trained in psychotherapy and family systems, and licensed to diagnose and treat mental and emotional disorders within the context of marriage, couples, and family systems.... They evaluate and treat mental and emotional disorders, and other health and behavioral problems, and address a wide array of relationship issues within the context of the family system. Marriage and family therapists broaden the traditional emphasis on the individual to attend to the nature and role of individuals in primary relationship networks such as marriage and the family. MFTs take a holistic perspective to health care; they are concerned with the overall, long-term well-being of individuals and their families.

These therapists graduate from accredited post-graduate preparation programs, and are licensed by the states in which they work. The American Association of Marriage and Family Therapy (AAMFT.org) provides credentialing standards for programs of higher education that ensure quality and ethics in supervision and

training. MFTs may work in a wide range of settings as well, including private practice, government agencies, and nonprofit mental/health organizations, and in research and teaching,

Family Case Management/Family Service

In family case management, the focus is on meeting family needs, family advocacy, and coordination of services. Case management is a component of most licensed social workers' practice (according to the NASW), and is a specific role adopted by those in the field. According to the NASW:

> With its strengths-based, person-in-environment perspective, the social work profession is well trained to develop and improve support systems (including service delivery systems, resources, opportunities, and naturally occurring social supports) that advance the well-being of individuals, families, and communities. Furthermore, social workers have long recognized that the therapeutic relationship between the practitioner and the client plays an integral role in case management. (p. 8)

As you consider these different areas of specialization, what do you see as potential differences in technology for program delivery or technology as a content focus? Others in the social work profession serve in a variety of roles, including working as clinical social workers, with therapeutic practice similar to that of psychologists and marriage and family therapists. As with other family professions listed above, social workers who work with families are licensed by the state in which they work and receive bachelor's and graduate degrees from accredited institutions. For more information about the range of practice, training, and certification of social workers, see https://www.socialworkers.org/Practice/Practice-Standards-Guidelines.

The Use and Value of Technology in the Delivery of Family Practice

New technologies and digital media can be integrated in family practice for outreach, evaluation, and assessment of learning; to foster discussion for sharing information and perspectives; in the delivery of content; and to facilitate social connections beyond face-to-face meetings (e.g, Blum, 2021; Breitenstein et al., 2014; Darling et al., 2020; Taylor & Robila, 2018; Walker, 2020). This can reduce the cost of program delivery and reach larger numbers of people without sacrificing effectiveness or participant satisfaction (Jones et al., 2014; Kumpfer et al., 2015). And it can mean tailoring to specific audience needs. Technology design addresses the wide-ranging and complex needs of contemporary families (e.g., Alford et al., 2019, addressing

smartphone use in foster care). In formal education, technology has long been promoted to help instruction and learning inside the classroom and out (Haythornthwaite & Andrews, 2011; UNICEF, 2017).

Family technology researchers observe several areas for growth: program implementation evaluation to include more socioeconomically and culturally diverse populations; attention to device innovation (e.g., the move from desktop to mobile); identifying mechanisms to accommodate wider audience needs and address access inequities; building program delivery on learning theory; and comparisons of online-only, and hybrid (face-to-face plus online) applications.

Technology integration in family practice also reflects growing interest and use by family members. Podcasts, websites, blogs, apps, social media, videos, and mobile applications have been utilized worldwide in the last 20 years (Hall & Bierman, 2015; Myers-Walls & Dworkin, 2015; Suárez-Perdomo et al., 2018).

Bullock and Colvin (2015) observe the history of technology use in social work practice and examine contemporary challenges to integration. In the 1980s, clinical practice involved one-way mirrors with clients to allow for interdisciplinary and team participation in assessment and training. Later in that decade, social work services on the internet emerged as online self-help support groups. By the 1990s, groups of clinicians offered online counseling services to the public using secure websites. Today, social work services include a much wider range of digital and electronic options. These allow social workers to engage clients through email, texting, or video teleconferencing using web cameras. Social workers who refuse to acknowledge technology as a practice trend risk falling out of step.

Piercy et al. (2015) identified a variety of ways in which marriage and family therapists used technology in practice. Interview research with 63 practicing therapists (18 male and 45 female) showed that technology related to business management (e.g., outreach, marketing, administrative services), assessment of clients, psychoeducation, direct treatment, the offering of self-help resources, and accountability. Face-to-face therapy was enhanced through the use of media, instructional videos, and psychoeducation materials. Therapists indicated that some clients were better able to communicate with technology, given their experiences of social anxiety.

Online educational and intervention programs

Evidence-based parenting programs and other face-to-face, short-term programs have been adapted to electronic delivery, including electronic text, audio, video, and interactive components delivered via the internet, DVD, or CD-ROM. Early evidence indicated promise for time efficiency (cutting down on travel

cost, implementation), participant completion, maximizing intervention fidelity, and sustainability (Breitenstein et al., 2014).

Nieuwbower et al.'s (2013) meta-analysis of 12 studies of internet-based parenting education applications found short-term benefits to knowledge and attitudes. Their study included programs of 2–15 sessions, with professional and in some cases peer support, deploying novel applications, including instruction by animated characters, remote coaching, progress monitoring, and video vignettes. Spencer et al.'s (2020) meta-analysis of 28 published studies, and Corralejo and Rodriguez's (2018) and Hall and Bierman's (2015) analysis of technology-adapted parenting education programs, observed the inconsistency in results and scope of the evaluations, from those indicating feasibility and a high degree of satisfaction with parents and/or staff, to those with more rigorous evaluations that demonstrated impacts on short-term outcomes in parenting, parent confidence, or child behavior. The majority of the studies focused on interventions for parents of young children. Spencer et al.'s analysis, for example, identified only 3 of 28 programs for parents of children 12 or older. And Corralegjo and Rodriguez (2018) observed the need for more research and applications offered in non-English languages. Researchers also observe the need to attend to participation, as rates of attrition seem high with online-only applications.

The availability of online delivery of parenting education programs is so prolific that clearinghouses identify programs that align with populations, topics and outcomes.

In some states and countries, parenting education is mandated for divorcing parents or as a first-level response for parents who have been reported to have abused or neglected their children. Online delivery makes completing these requirements convenient. Research on adaptations to existing face-to-face programs has demonstrated positive, albeit short-term, results. Variations of this research include examining wholesale adaptations of evidence-based parenting education program to online delivery (Hall & Beirman, 2015; Long, 2016; Neiuwbower et al, 2013; Spencer et al, 2020), hybridizing online delivery with person-to-person contact (Day & Sanders, 2018), and an online component to complement face-to-face delivery (Love et al., 2016; Walker, 2017). Some of this research is discussed below.

Triple P parenting has adopted its EBP intervention program to technological interfaces with a television series, an online version (Turner & Sanders, 2011), and recorded podcasts (Morawska et al., 2014), all demonstrating short-term effects greater than those in control samples. Day and Sanders (2018) examined clinical outcomes, program engagement, and satisfaction in a random control trial of the online Triple P parenting program, the online program with telephone consultation by a trained practitioner, and no treatment. The supplemented online component revealed greater benefits in reducing overall negative parenting and frequency of child behavior problems. Participants reported greater satisfaction with the

program and showed higher rates of module completion than did either the online-only group or the no-treatment group.

while self-directed online programs have value to knowledge acquisition, influencing parenting attitudes and translation to practice are best accomplished with a social, guided component.

Similar evidence was found when the self-administered and technology-adapted Incredible Years program incorporated professional coaching and access to an interactive forum (Taylor et al., 2008). Nieuwbower et al. (2013) also asserted that while self-directed online programs have value to knowledge acquisition, influencing parenting attitudes and translation to practice are best accomplished with a social, guided component. This suggests that, while online parenting education can be designed to be user-friendly and to integrate learning design principles (Hughes et al., 2012), including social interaction and direct connection to the practitioner may provide social capital and learning benefits that exceed the value of self-directed learning alone. Deploying mixed methodologies that include a social component may be key to reaching diverse audiences.

Social components can be added to online applications that complement face-to-face parenting education. When the Triple P Parenting program incorporated social media and gaming features (e.g., badges as incentives to participation) in outreach with a highly vulnerable population, outcomes for reducing child behavioral problems, permissive or over-reactive parenting, and parental stress were improved (Love et al., 2016). Respondents appreciated the flexibility, anonymity, and shared aspect of the online community. And a web platform for ECFE parents (*Parentopia*, introduced in the About the Author page) and staff to connect between classes (or to act as a supplement when parents couldn't attend face-to-face) proved effective at strengthening social connections and a sense of identity in program affiliation (Walker, 2020). A key was in participatory design of the technology to align with program community orientations, values for parent inclusivity in language and access, and repeated usability testing to make the platform user-friendly (Walker, 2017).

Four of the evaluations in Breitenstein et al.'s (2014) review were of evidence-based programs delivered exclusively online (including the Incredible Years and Triple P parenting). The authors suggested a controlled comparison of online and in-person applications with the same intended program outcomes (parenting skills, parent-child interactions, and children's outcomes), and suggested that a cost-benefit comparison was warranted for full assessment. After research of in-person programs with investigations of their online adapted counterparts, Nieuwbower et al. (2013) observed that the results of online adaptations cannot be assumed from in-person outcomes. Online delivery is different, and includes many variables to consider in effective deployment.

Family education technology researchers observe the need for improvement in the study of online programs: inclusion of more socioeconomically and culturally diverse populations, attention to modern devices (e.g., mobile), building program delivery on learning theory (reviewed programs were absent in theory), and comparisons of tech-only and technology-plus applications.

While research on the design of technology-enriched or online delivery of parenting education is still in its infancy, lying in wait is research on the implementation of these systems for effective and sustained delivery. Forgatch et al. (2013) observed the implementation process of the Parent Management Training Oregon model (PMTO) with community service systems and the search for fidelity in program implementation. They identified a two-system (adopting community and program developer) and four-stage (preparation, early adoption, implementation, sustainability) model that characterizes the many considerations. The PMTO scholars also note the benefits of using technology in program implementation and fidelity. A centralized database incorporating video intervention sessions permitted reliability checks of raters, and a centralized website enabled program leaders to fine-tune implementation and oversight of facilitators' competence. As the PMTO model has been replicated in multiple states and countries (including Iceland, Norway, and Mexico), online data management enables efficient implementation on a global scale. Even so, the authors raise a number of questions about policy and practice that reveal the added complexity of using ICT in program implementation.

Digital Skills Required for a 21st-century Family Professional Workforce

The National Academies of Science (NAS) offered predictions of workforce needs in the 21st century relative to information technologies. They …observe that the ultimate impacts of technology will be determined by technical capabilities, how technology is used, and how individuals, organizations and policy makers prepare for and respond to shifts in the economic and social landscape.

In 2017, the National Academies of Science (NAS) offered predictions of workforce needs in the 21st century relative to information technologies (IT and the U.S. Workforce: Where do we go from here?). They highlight the growth of artificial intelligence and "smart" devices, and observe that the ultimate impacts of technology will be determined by technical capabilities, how technology is used, and how individuals, organizations and policy makers prepare for and respond to shifts in the economic and social landscape. Sadly, without adaptation, professionals could face real consequences.

The NAS calls on the educational system to adapt. Worker skills will require creativity, adaptability, and interpersonal skills over routine and manual tasks, and as noted in Chapter 9, there will be growth in on-demand employment. The NAS also called for multidisciplinary research and improved tracking of the workforce and of technology development.

More recently, the Pew Internet and American Life project interviewed 90+ leaders about the future and about employment skills relative to technology. There was agreement that work would be more flexible and less bounded by time or place, and would require workers to have adaptable skills.

Related to family professionals, in 2016 Nicholas Long offered these predictions for practitioners of parenting education:

1. There will be an increase in studies that examine how provider knowledge, training, and skills impact the effectiveness of different parenting education services.
2. There will be an increased focus on identifying core competencies as well as ethical guidelines for parenting educators.
3. There will be a growing interest in certifying those who provide parenting education

services (beyond program-specific certification).

4. There will be a greater focus on how to most effectively train and supervise providers of parenting education services.

And the American Association of Family and Consumer Sciences (AAFCS) highlighted technological skills as a necessary component of workplace skills in the "employability skills framework" for the 21st century, as complementary to applied knowledge and effective relationship skills.

Pre-Professional Assessment & Certification in Interior Design Fundamentals

Alignment to the Employability Skills Framework*

Employability Skill	Domain 1 Career Paths	Domain 2 Design Fundamentals	Domain 3 Factors Influencing Design	Domain 4 Design Communications & Skill Development	Domain 5 Interior Design Application & Analysis	Domain 6 Professional Practice
Applied Knowledge						
• Applied Academic Skills *Uses reading skills, writing skills, mathematical strategies and procedures, and scientific principles and procedures*		✪	✪	✪	✪	✪
• Critical Thinking Skills *Thinks critically and creatively; makes sound decisions; solves problems; reasons; and plans and organizes*	✪	✪	✪		✪	✪
Effective Relationships						
• Interpersonal Skills *Understands teamwork and works with others; responds to customer needs; exercises leadership; negotiates to resolve conflicts*			✪		✪	✪
• Personal Qualities *Demonstrates responsibility and self-discipline; adapts and shows flexibility; works independently; demonstrates a willingness to learn; demonstrates integrity; demonstrates professionalism; takes initiative; displays positive attitude and sense of self-worth; and takes responsibility for professional growth*	✪		✪		✪	✪
Workplace Skills						
• Resource Management *Manages time, money, materials, and personnel*			✪	✪	✪	✪
• Information Use *Locates, organizes, uses, analyzes, and communicates information*	✪	✪	✪	✪	✪	✪
• Communication Skills *Communicates verbally; listens actively; comprehends written material; conveys information in writing; and observes carefully*				✪		
• Systems Thinking *Understands, uses, monitors, and improves systems*			✪		✪	✪
• Technology Use *Understands and uses technology*			✪	✪		

Developed by the U. S. Department of Education, Office of Career, Technical, and Adult Education (http://cte.ed.gov/employabilityskills/index.php/framework/)

Core Subjects and 21st Century Themes
Learning and Innovation Skills
Information, Media, and Technology Skills
Life and Career Skills

		Core Subjects	Global Awareness	Financial, Economic, Business, Entrepreneurial Literacy	Civic Literacy	Health Literacy	Environmental Literacy	Creativity & Innovation	Critical Thinking & Problem Solving	Communication & Collaboration	Information, Media, & Technology Skills*	Flexibility & Adaptability	Initiative & Self-Direction	Social & Cross-Cultural Skills	Productivity & Accountability	Leadership & Responsibility
Careers and Volunteer Opportunities																
1A.	Analyze opportunities, needs and rewards for employment and entrepreneurial endeavors.			✓							✓		✓			✓
1B.	Summarize education and training requirements and the process of obtaining employment in family and community services arena.			✓							✓		✓	✓		
1C.	Explain the roles and functions of individuals engaged in family and community services careers.			✓						✓		✓			✓	
Factors Related to Family and Community Services																
2A.	Identify ethical and legal issues that confront human service employees.			✓	✓				✓						✓	✓
2B.	Determine personal values, biases, and stereotypes.		✓							✓				✓		✓
2C.	Analyze harmful, fraudulent, and deceptive human service practices.			✓					✓	✓				✓		✓
2D.	Evaluate uses of technology in human services.			✓				✓			✓				✓	
2E.	Select effective self-advocacy strategies to overcome diverse challenges facing human services professionals.		✓		✓				✓	✓			✓			✓

http://www.aafcs.org/credentialing-center/pre-pac/assessment-alignment

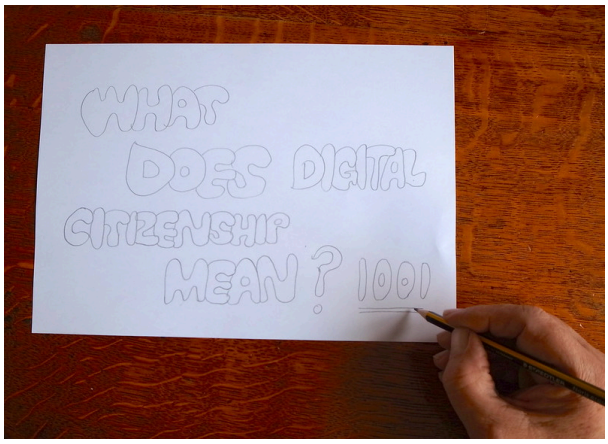
As indicated above, media and technology skills are also recognized by the AAFCS as key competencies, along with learning and innovation skills and life and career skills.

In writing about the application of technology to family therapy, Piercy et al. (2015) observe shifts in human behavior and the perception of meaning through both symbolic interaction and social constructivist lenses. Social constructionism believes meanings are transitory and developed through interaction and social agreement. When couples use digital technology, they are creating relationship through online interaction and, even more, are constructing couple identities, expressing themselves as couples, and negotiating the meaning that technology offers to their relationships. The authors also note that, while cyberspace can enhance perceptions of and opportunities for intimacy, it can also reflect deception and fraud. Examples abound of being "ghosted" or "cyberstalked," and of personal information being used without permission. From such interactions, individuals interpret and make meaning, creating symbolic worlds that can shape behavior. Couples come into therapy having constructed a narrative of themselves through these online interactions — narratives and self-identities which therapists must accommodate. Piercy et al. (2015) hold that it is essential that therapists are aware of the force online interactions can hold for relationships and intimacy. And Blum (2021), who has used TikTok as a medium for relationship and therapy education, warns that users may disregard boundaries and perceive that a therapist's presence online is an invitation to begin 1:1 therapy.

As educators such as Mike Ribble observe, **being a good digital citizen is a requirement for us all**, as information technologies are now a part of our daily life. This means having the knowledge to use technology intentionally, and in ways that ensure safety along with effective use. To that end, we require not just digital skills, but a full understanding of information technology as it can impact human life. We need to possess the qualities and knowledge of a good digital citizen. Family professionals assist couples, parents, and families in using media in healthy ways, and understand areas of potential conflict that family members can resolve together.

Digital citizenship

To begin a discussion of technology skills, knowledge, and comfort for family professionals (Godfrey, 2016) is to center on the Elements of Digital Citizenship (Ribble, 2015). These provide broad categories of consideration for safe and effective use of the internet and of information and communications technologies:



"265-365 (Year 7)Digital citizenship" by Georgie R is licensed under CC BY-ND 2.0.

- Digital **access**: full electronic participation in society
- Digital **commerce**: electronic buying and selling of goods
- Digital **communication**: electronic exchange of information
- Digital **literacy**: basics of technology and its use
- Digital **etiquette**: electronic standards of conduct
- Digital **law**: electronic responsibility for actions and deeds
- Digital **rights and responsibilities**: freedoms extended to all in a digital world
- Digital **health and wellness**: physical and psychological well-being
- **Digital security: electronic precautions to guarantee safety**

Further clarification of these elements can be found in Godfrey's article (p.19), and in these scenarios created for teachers.

Digital citizenship strands have been simplified into four dimensions, along with what the Dig Cit Doctors call "enduring understandings:"

Digital Citizens keep themselves and each other safe.

Enduring Understandings:

1. Laws, rules, and social norms govern digital spaces.
2. Digital identities, data, and online activities are commodities.
3. Individuals and organizations may misrepresent themselves online.

Media Information and Literacy

Digital Citizens responsibly consume, create, and share digital content.

Enduring Understandings:

1. Effective search strategies help individuals locate information online.
2. Digital information varies in value, quality, and reliability.
3. Media influences individual perceptions and societal actions.
4. Technology can be used to express and amplify ideas.

Digital well-being

Digital Citizens prioritize their digital well-being and the well-being of others.

Enduring Understandings:

1. Self-awareness and the use of intentional strategies can support a healthy digital diet.
2. Online personas are constructed reflections of an individual's identity.
3. Technology may play a role in both advancing and impeding human connection.

Social Responsibility

Digital Citizens are socially conscious and empowered to influence change.

Enduring Understandings:

1. Digital citizens have a collective responsibility for the ethical design, use, and regulation of new technologies.
2. Technology is a powerful vehicle for civic engagement.

3. Technology both highlights and perpetuates social inequities.

Framework for teaching digital citizenship

Family educators — whether teaching in formal settings, such as higher education or secondary schools, or in non-formal settings in work with parents — can teach elements of digital citizenship. Ongoing shifts in technology device availability and in applications used in formal education, informal learning, and social worlds (e.g., TikTok, Schoology) mean that parents need to stay current for active engagement, anticipate challenges, identify probable hacks, and provide guidance. Parenting education can acquaint caregivers with relevant information on children's developmental domains and age stages to help parents understand what children are capable of and responsible for as they navigate their presence online, face potential threats, and reap creative and collaborative rewards.

Educators can assist parents and families with vetting the quality of material when choosing what to read.

Parents are curious about how to know when children are ready for smartphones, how much screen time is healthy, preventing threats to privacy and safety, and preventing cyberbullying. And parents vary in their ability to discern differences in online information and in skills that relate to education and literacy. As parents use technology in their roles as parents — texting and video calls to communicate with children and to reassure and coach their children through challenges, learning alongside children with education technologies, and sharing the joy of gaming — parenting education can help promote the value and use of these new media and possibly create new rules for parent-child communication. Finally, parents may need help navigating these spaces, as they too can be subject to social comparison, bullying, and overuse.

When new technologies and workplace policies mean the navigation of flexible work, home, and space boundaries, family professionals can help working parents acquire "digital cultural capital." This isn't an exhaustive list of topics that can be covered by family educators, but indicates some of the many elements of parenting and family life that naturally integrate technology.

Ribble (2015) offered a four-stage reflection framework for teaching digital citizenship that can be applied to traditional, formal classroom instruction and non-formal learning opportunities for parents and families:

1. Being aware of technology use and its appropriate use. Students are asked to reflect on their technology use at home and at school.
2. Guided practice.
3. Modeling and demonstrating. Teachers as well as adults need to practice good digital citizenship habits in their own lives.
4. Feedback and analysis. It is important to have a classroom environment where students feel comfortable in discussing how they use technology at home and at school.

Family Professionals and Competency Standards Indicative of Technology Skills and Knowledge

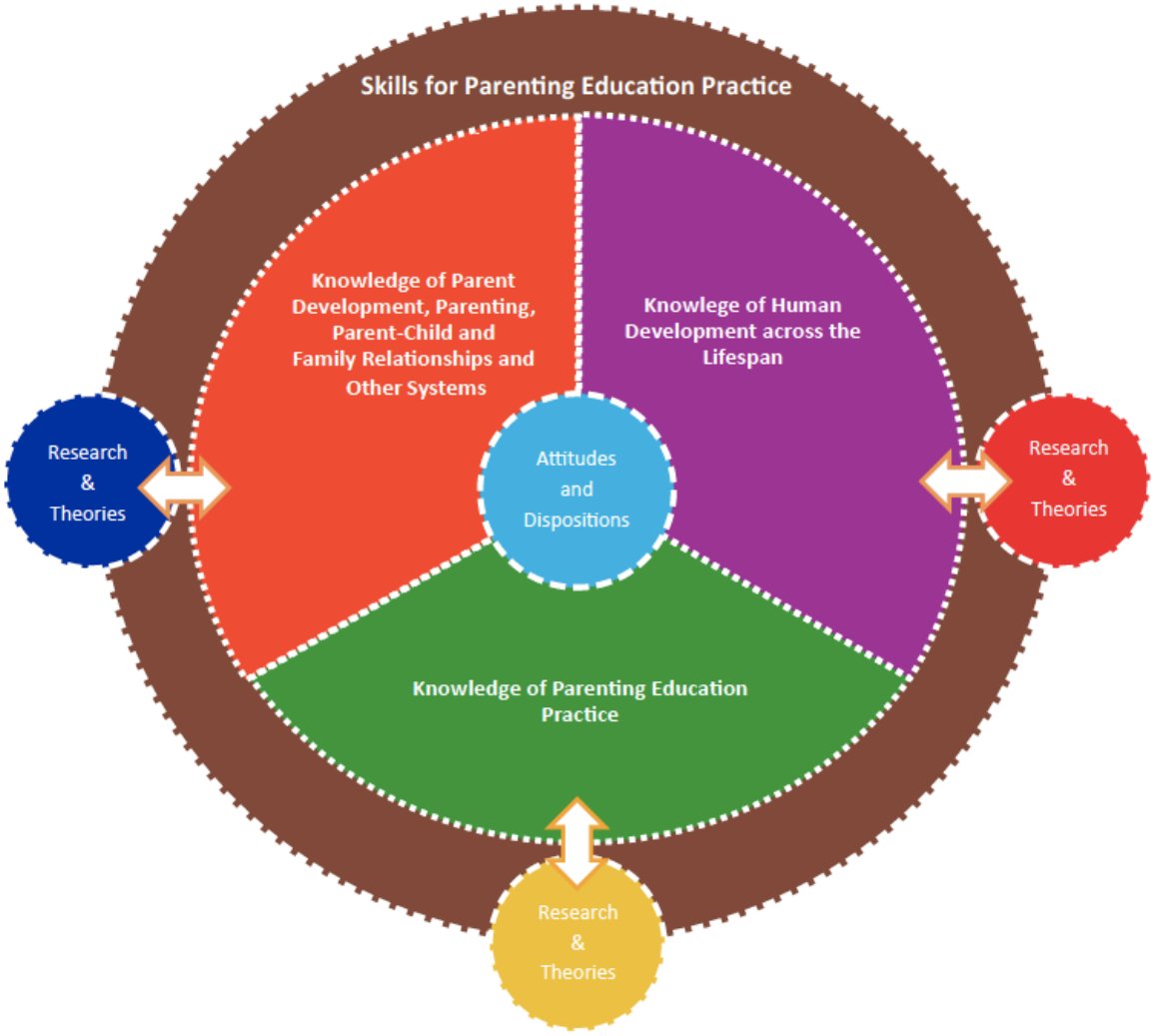
Each of the family professional speciality areas have competency standards that guide preparation and practice; within these lie opportunities to integrate technology as both a knowledge and skill area for professionals. Competency standards are used to inform state and national licensing, as well as credential and accreditation requirements, in turn informing the creation and selection of curricula offered in higher education programs of professional preparation. They are also used to inform professional development opportunities, conference themes, and training. And professional standards inform job descriptions and requirements used by employers of family professionals. In short, these standards hold tremendous importance in shaping practice direction and innovation.

Family Education

The National Parenting Education Network (NPEN) framework on the competencies of parenting educators finds content knowledge bridging both parenting and human development, along with knowledge of the practice of parenting education (figure below). Competencies also include requisite skills to practice and deliver parenting education. These include:

- Foundations of parenting education

- Adult learning and education
- Educational methodology/instructional design
- Working with parents in groups
- Working individually with parents and family (home visits, one-on-one instruction, consultation, coaching)
- Assessment and evaluation
- Relationships and communication with parents and families
- Professional behavior and development



https://npen.org/Professional-Parenting-Educator-Competencies (used with permission)

At the center of the competencies are the educator's attitudes and dispositions (Wadlington & Wadlington, 2011). These include professional conduct (e.g., accepts responsibilities), professional qualities (e.g., demonstrates a commitment to the individual student), and communication and collaboration (e.g., displays

sensitivity in interacting with others, UMN, 2017). And all dimensions are informed by ongoing developments in research and theory. For those who practice family life education, working as family and consumer sciences teachers, financial or nutrition educators, or in other family-related specialities, guidelines for practice with technology can be found by professional bodies that promote quality teaching and support teachers.

Technology standards in formal teacher preparation

State teacher licensing includes standards for teaching with technology. In Minnesota, where all teachers must demonstrate competency in teaching standards and in content related to their content area license (e.g., science education, preK-grade 3, parenting and family education), teaching standards include a specific section related to technology competence, with the following elements:

- Technology-enriched learning environments
- Diverse learning
- Assessment
- Discrimination
- Technological knowledge
- Digital citizenship
- Contribution to the teaching profession
- Broadening student knowledge about technology
- Variety of technologies

Competency 2H, for example, reads "demonstrate knowledge and understanding of concepts related to technology and student learning;" Competency 3R reads "identify and apply technology resources to enable and empower learners with diverse backgrounds, characteristics, and abilities." And 9M reads "understand the role of continuous development in technology knowledge and skills representative of technology applications for education." These standards are created with guidance from professional bodies for teacher development, some of which specialize in technology. The Council for the Accreditation of Educator Preparation (CAEP) covers the following technology themes within their seven standards areas:

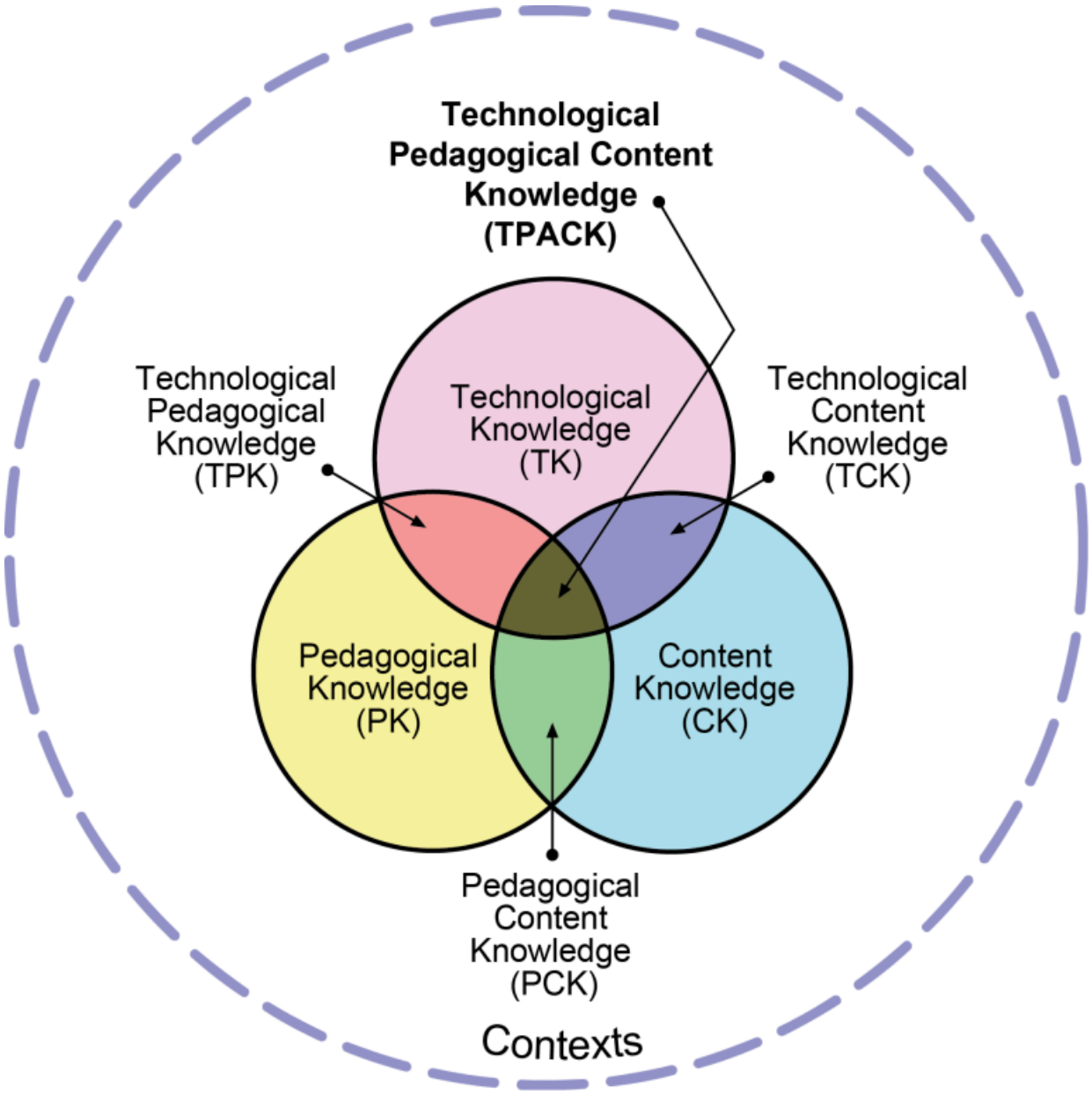
- Student learning
- Clinical practice
- Technology integration

PK-12 instructor standards groups, including the International Society for Technology in Education (ISTE)

(https://www.iste.org/standards) and the Interstate Teacher Assessment and Support Consortium (InTASC), identify more specific technological themes:

- Modeling (ISTE)
- Real-world issues (ISTE, InTASC)
- Reflective learning (ISTE)
- Communication (ISTE, InTASC)
- Global awareness (ISTE)
- Leadership (ISTE)
- Research / Professional practice (ISTE, InTASC)
- Technology integration (InTASC)
- Professional engagement (InTASC).

Formal education technology theory, research, and practice, inclusive of teacher preparation, has much to offer family education as a basis for how to understand, integrate, and study technology integration and educator support. The TPaCK framework, for example, identifies the intersection of using specific technologies (T) to enhance pedagogical practice (P) and enrich content knowledge (CK) delivery (Mishra and Kohler, 2006; figure below). Other models promote technology selection to align with learner activity levels (passive to active) and desired instructional outcomes of Replace, Augment, Transform (e.g., PICRAT, Kimmons, 2012), or translate particular technology use aligned with traditional learning theories or frameworks, such as Bloom's taxonomy (Churches, 2010).



Because many who practice family education are not working in formal settings or do not hold teaching licenses, there are likely to be differences in practitioner preparation and oversight. Most definitely there are differences in practice. Those who work in non-formal education often have adults (21–60+ years) as an audience. The participants' attendance is for enrichment and is often voluntary, not for degree acquisition. Therefore, learner motivations for attending are different. Learning needs are more experiential and problem-focused. These adult learners find value in support and a feeling of community, as much as in knowledge and skill acquisition.

Family education technology integration standards

Standards specific to family education technology integration that match the specificity and breadth of formal classroom (e.g., K-12) teacher preparation do not exist. The American Association of Family and Consumer Science (AAFCS) offers guidance that informs family and consumer science teachers and Extension Educators focused on family and consumer science. Specific to family education, groups like the National Council on Family Relations have standards for Certified Family Life Educators (CFLE). Certification requires demonstration of competence in knowledge across nine content areas and in education methodology. Although technology knowledge and skill is represented in these standards, it is more generally addressed: https://www.ncfr.org/sites/default/files/2020-02/FLE-Content-and-Practice-Guidelines-2014-objectives.pdf.

There are sub-specialties in parenting education informed by the National Parenting Education Network (NPEN), in nutrition or health education informed by certification with the National Commission on Health Education Credentialing, and in finance education informed by the Financial Educators Council. Readers are encouraged to explore the specific standards set out by each body for specificity and inclusion of technology knowledge and skill.

Unlike the discipline of formal education, with its infrastructure of federal and state government involvement, licensing requirements that align with state policies and mandates, and a century of research and professional organization through groups like the American Education Research Association and the National Education Association (nea.org), family education does not have a strong, centralized national presence that directs practice or the preparation to practice. Efforts toward competencies are thus decentralized and inconsistent, and the inclusion of technology is even more fragmented and precarious.

The National Parent Educators Network (NPEN) has standards for professional and paraprofessionals in parenting education. Within these standards, specifics related to technology as content expertise or in teaching are both implied and explicit. Even so, adherence to national standards related to technology integration in family education and in its specific content areas, like parenting education, varies greatly.

In the U.S., for instance, NPEN (npen.org) lists practice by state, revealing requirements for paraprofessional, professional, degreed, and licensed (MN) educators. While as a network they can offer standards of practice that are inclusive of technology skill for delivery, and these may inform practice, they don't dictate training or certification in ways that bodies such as those for social work and family therapy do, as discussed below. Until there are more unified efforts toward both family educator standards of practice and preparation, guidance and training on technology will continue to be fragmented and, sadly, dependent on

the individual or workplace. In a U.S. study of 722 parent and family educators, the majority (74%) indicated "learning on my own" to a moderate or major extent as the training that prepared them to use technology (Walker, 2019). Reports of training by professional development (50.6%) or in college (42.6%) were lower. Only one-third reported needing technology training to maintain a professional credential, and nearly all of these were licensed teachers.

Family Therapy

Credit: EKATERINA BOLOVTSOVA

Couple and family therapists are guided in practice by competencies set by associations such as the American Counseling Association (ACA), the American Association of Marriage and Family Therapists (AAMFT), or the National Association of Social Workers (NASW). The ACA's 2014 edition of ethical standards was the first to include a discussion of social media in practice in the section on Distance Counseling, Teletherapy and Social Media (section H, pp 17–18). The section speaks to informed consent and security, knowledge and legal considerations, distance counseling relationships, client verification, records management and web maintenance, and the use of social media. The AAMFT includes a section on technology-assisted services (section VI) in its ethical standards. As in the ACA guidelines, this section covers delivering services through telehealth, informed consent, confidentiality, documentation and the privacy of records, and professional responsibilities. In part, these guidelines concern the delivery of services beyond traditional place-based therapy — in other words, jurisdiction considerations that cross state or country lines. They also identify the boundaries of professional identities — when, for instance, maintaining separate accounts as a professional and as a private citizen (e.g., virtual professional presence).

Given research by Piercy et al. (2015) that indicates the range of ways in which technology is used by family therapists, while it is very appropriate that professional associations address ethical concerns when using the internet to delivery therapy, there are numerous skill sets needed to effectively deploy technology in practice.

Family Service and Social Work

In 2017, a collective of professional associations for social work — the National Association of Social Work (NASW), the Association for Social Work Boards (ASWB), the Council on Social Work Education (CSWE), and the Clinical Social Work Association (CSWA) — created Standards for Technology in Social Work

Practice. The work's table of contents, below, indicates the breadth and depth of interest in the topic as implemented in the field and in preparation of professionals:

Table of Contents for Standards for Technology in Social Work Practice

Section 1: Provision of Information to the Public

- Standard 1.01: Ethics and Values
- Standard 1.02: Representation of Self and Accuracy of Information

Section 2: Designing and Delivering Services

- Standard 2.01: Ethical Use of Technology to Deliver Social Work Services
- Standard 2.02: Services Requiring Licensure or Other Forms of Accreditation
- Standard 2.03: Laws That Govern Provision of Social Work Services
- Standard 2.04: Informed Consent: Discussing the Benefits and Risks of Providing Electronic Social Work Services
- Standard 2.05: Assessing Clients' Relationships with Technology
- Standard 2.06: Competence: Knowledge and Skills Required When Using Technology to Provide Services
- Standard 2.07: Confidentiality and the Use of Technology
- Standard 2.08: Electronic Payments and Claims
- Standard 2.09: Maintaining Professional Boundaries
- Standard 2.10: Social Media Policy
- Standard 2.11: Use of Personal Technology for Work Purposes
- Standard 2.12: Unplanned Interruptions of Electronic Social Work Services
- Standard 2.13: Responsibility in Emergency Circumstances
- Standard 2.14: Electronic and Online Testimonials
- Standard 2.15: Organizing and Advocacy
- Standard 2.16: Fundraising
- Standard 2.17: Primary Commitment to Clients
- Standard 2.18: Confidentiality
- Standard 2.19: Appropriate Boundaries
- Standard 2.20: Addressing Unique Needs

- Standard 2.21: Access to Technology
- Standard 2.22: Programmatic Needs Assessments and Evaluations
- Standard 2.23: Current Knowledge and Competence
- Standard 2.24: Control of Messages
- Standard 2.25: Administration
- Standard 2.26: Conducting Online Research
- Standard 2.27: Social Media Policies

Section 3: Gathering, Managing, and Storing Information

- Standard 3.01: Informed Consent
- Standard 3.02: Separation of Personal and Professional Communications
- Standard 3.03: Handling Confidential Information
- Standard 3.04: Access to Records within an Organization
- Standard 3.05: Breach of Confidentiality
- Standard 3.06: Credibility of Information Gathered Electronically
- Standard 3.07: Sharing Information with Other Parties
- Standard 3.08: Client Access to Own Records
- Standard 3.09: Using Search Engines to Locate Information about Clients
- Standard 3.10: Using Search Engines to Locate Information about Professional Colleagues
- Standard 3.11: Treating Colleagues with Respect
- Standard 3.12: Open Access Information
- Standard 3.13: Accessing Client Records Remotely
- Standard 3.14: Managing Phased Out and Outdated Electronic Devices

Section 4: Social Work Education and Supervision

- Standard 4.01: Use of Technology in Social Work Education
- Standard 4.02: Training Social Workers about the Use of Technology in Practice
- Standard 4.03: Continuing Education
- Standard 4.04: Social Media Policies
- Standard 4.05: Evaluation
- Standard 4.06: Technological Disruptions
- Standard 4.07: Distance Education
- Standard 4.08: Support
- Standard 4.09: Maintenance of Academic Standards

- Standard 4.10: Educator–Student Boundaries
- Standard 4.11: Field Instruction
- Standard 4.12: Social Work Supervision

Standards such as these are a response to the work of social work practice observers such as Bullock and Colvin et al. (2015), whose research indicates the tensions in the field among practitioners more or less comfortable with using technology in practice.

Workplace Support and Professional Development

"Love the dedication of our #coetail members: @mrbrenlea Skypes in to Course 5!" by superkimbo is licensed under CC BY-NC-SA 2.0.

As noted, standards for practice in family professions serve many purposes in guiding practitioner training and development, informing curricula in higher education majors and career development programs, and guiding credentialing and licensing of professionals before practice begins. Technology has become a popular topic in professional development, with content foci on technology use by children, privacy and ethics, effective applications, and, in particular COVID-19 and the near complete transfer of delivery from in-person to online. In family therapy, for example, the American Counseling Association offers professional development workshops and materials on cyberbullying, and the American Association of Marriage and Family Therapy offers a network to assist with telehealth questions.

Yet a middle ground for professional support on technology use lies in the everyday practice and context of practitioners. Since 2010, the author has conducted research on technology use by parent and family educators and on workplace conditions that influence technology acceptance. Repeatedly, whether sampling educators in a single state and practice emphasis (e.g., parenting education in Minnesota, Walker & Hong, 2017) or nationwide with a diverse sample of 700+ educators representing multiple dimensions of family education (Walker, 2019; Walker, et al., 2021), the findings validate workplace conditions as a significant

influence. Those perceiving higher workplace supports in infrastructure (e.g., encouragement) and resources (e.g., access to devices, training) report more accepting attitudes toward technology and are more likely to use a range of technologies.

The research model adopts Davis' (1989) Technology Acceptance Model (TAM), which stems from concepts of behavioral intention (e.g., Ajzen, 1989). Technology attitudes accepting of innovation and information and communications technologies drive the intention towards use, and the use of technology itself. Two factors related to acceptance are PE — perceived ease of use, and PU — perceived usefulness. PU is influenced by PE (this makes sense, since if we believe something is easy to use we are more likely to find it useful to our purposes). Modifications of Davis' original model include consideration of external conditions, such as in research of preservice teachers in Singapore by Teo et al. (2008).

From our national sample of 722 family education professionals, the perception that technology was easy to use, and the perception that technology had value to their work were directly related to technology acceptance attitudes. Workplace supports were indirectly related to attitudes and had a direct influence on perceptions of technology use and value.

Validating this model to align with the conditions and practice of family educators (Walker & Kim, 2015), the author later investigated the role of workplace conditions (Walker, Lee, & Hong, 2021). Although "use" was measured in the studies, it was not used as the dependent variable, since an objective measure of use cannot be determined for a field as wide-ranging as family education. Rather, the models predicted **acceptance attitudes, a more flexible indicator of use as conditions, learner needs, and types of applications change.** Technology attitudes and the attitude precursors of PE and PU were adapted from measures by Teo et al. (2009). These are 5–7 item constructs, with responses measured by a 5-point Likert scale (strongly disagree to strongly agree). Examples included usefulness (e.g., "Using technology will improve my work"), and ease of use (e.g., "I find it easy to get technology to do what I want it to do"). Workplace conditions were measured by a 12-item index from Papanastasiou and Angeli (2008), also measured by a 5-point Likert scale. Workplace attitude constructs of workplace infrastructure (e.g., technology support, devices, including "A variety of hardware and software is easily available for me to use in my program) and workplace encouragement (e.g., discussions about technology, including "I often exchange ideas about technology use with other Parent Educators"). Our analysis method used Confirmatory Factor Analysis and Path Modeling. As previously noted, from our sample of 722 national family educators, technology attitudes were related directly to PE and PU. Workplace encouragement and workplace infrastructure indirectly influenced acceptance attitudes as mediated by PU and PE, respectively. Workplace encouragement also showed a small but direct influence on technology acceptance.

Research like this provides support for examining the primary and often enduring context that shapes family educators' practice and technology use, and for **advocating for conditions conducive to innovation and accommodation** with new media. Yet the reality is that family educators are irregularly held to technology standards in the workplace. While some mention the receipt of devices or training by their employers (also highly variable, and far less likely for those who are self-employed or working with non-profits), few note that use of technology is a performance standard for review or for hiring (Walker, 2019). Moreover, **workplace conditions of family and parenting educators vary even more greatly**, with some workplaces offering tangible encouragement (e.g., performance assessments) and support (e.g., training and technical support) specific to technology use, while most others do not. Parenting educators, occasional family educators (e.g., teachers, counselors), and family life educators vary from those in higher education/administration, who have more technology resources, report more positive attitudes, are more confident about their skills, and view formal technology training as useful. These disparities indicate that those preparing family educators may not have realistic ideas about workplace conditions, and are therefore not adequately preparing or filling the gaps needed by practitioners. They also validate the sense that those working on the front lines with parents and families face less supportive conditions, which weakens their ability in practice.

COVID-19 Impact on the Delivery of Family Practice and Education; The Use of the Internet and Information and Communications Technology

The COVID-19 pandemic provides us with the best evidence for advocating for family professionals' knowledge and comfort with technology. The pandemic started while we were working to resolve tensions around the use of technology in practice, the value of teaching online or delivering therapy at a distance compared with face-to-face encounters, and the degree to which practitioners deploy new media in their work. Schools, organizations, and businesses were shuttered, and the delivery of service relied on the internet and on the ability of professionals to adapt.

Using her association with Early Childhood Family Education in Minnesota, the author conducted research with educatorswhen COVID hit programming in the spring of 2020, and again one year later. As COVID began, educators were fearful, yet optimistic. They felt that they could adapt their programming, yet knew that they needed strong administrative support, including technology resources. Primarily, they worried for families — that families would not be able to access

Here is a short video about ECFE (featuring the Bloomington, MN schools)

programming and that those marginalized would be especially vulnerable. They hoped that whatever initiatives were implemented would be sensitive to these needs. When there is stress on existing systems for program delivery, like that brought by the pandemic, the weaknesses in providing for technological training and support are evident. These are quotes from educators faced with adapting their programs for COVID:

> With so little planning time, and support for the technology available through the district, It really felt like the train left the station without [me].

> At one moment, I would feel ineffective, as though I was working in a vacuum, putting material for families out into a void where it wasn't doing anyone any good. And I felt selfish for wishing I would hear from families, knowing that they were likely stressed and overwhelmed. I struggled to know that there was anything that I was doing — to meet any real needs.

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://open.lib.umn.edu/technologyfamily/?p=364#oembed-1

One year later, and with a sample representative of the whole state and distributed by parenting, early childhood educators, and program coordinators (with some holding two or more roles), educators reported on an amazing array of accommodations used to reach families at home during the pandemic. Smaller, more rural programs could continue with reduced classes, face-to-face. All programs needed to deploy the internet and technology applications for outreach, teaching, and assessment. More than 90% reported using email and videoconferencing (e.g., Zoom); approximately half reported using technologies like social media, a school website, a learning management system, texting programs like Remind, and YouTube.

Sensitivity to differences in parents' technology skill can mean knowing how to adapt instruction for the greatest attention and engagement.

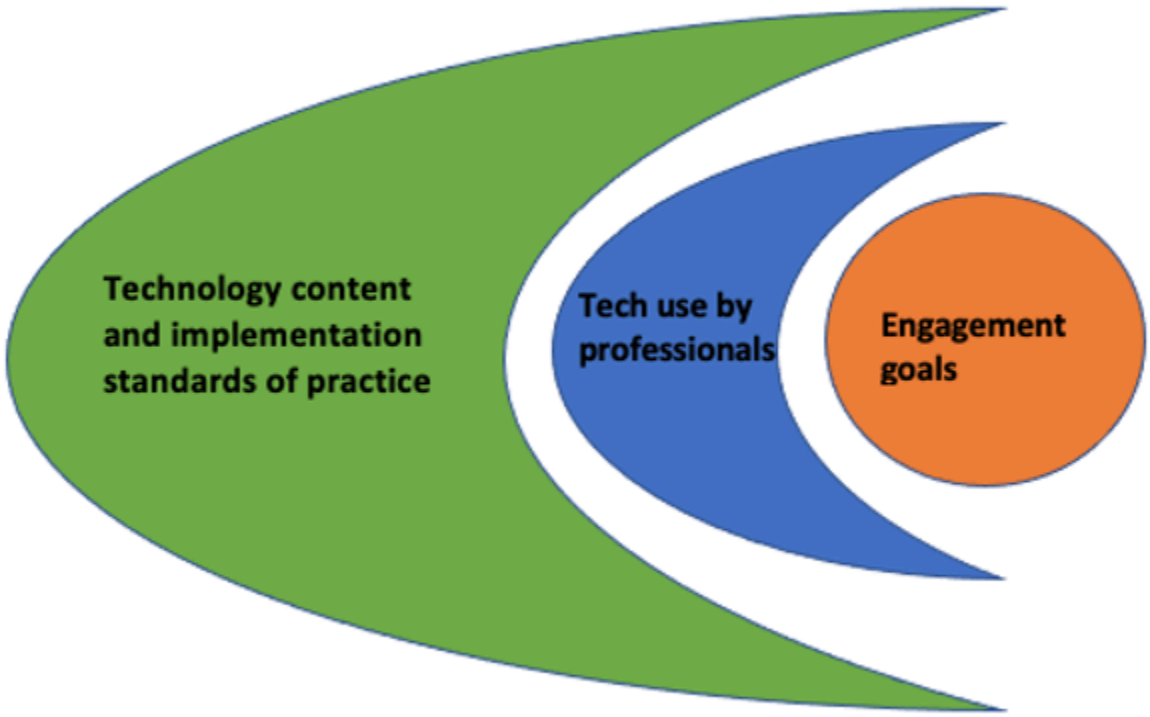
During COVID-19, for example, parenting educators in Minnesota moved group-based discussion and the early childhood learning component to video conferencing (Walker et al., 2020). Within weeks, however, they learned that families were overwhelmed with screens by the end of the day. The educators lowered expectations for attendance, and found other creative ways to engage online (e.g., asynchronous video posts, collaborative tools) and safe face-to-face methods for families to engage in smaller numbers. They also addressed equity through the use of take-home learning packets provided by the district (at no cost to parents), loaned tablets and wifi hotspots, and worked with districts to redistribute budgets to accommodate parents with limited technology access.

Educators expressed pride at pulling together to offer flexible opportunities for learning for parents and children and ways for family relationships to stay strong, along with sadness that more resources weren't offered to help reach more families and that technology assistance was fair at best (Walker et al., in press). Nearly one-fifth reported receiving no resources, and the majority indicated that their own experiences and support from their peers were the best methods for learning how to use technology. Being "thrown into the fire" of having to use technology did prove to be a good teacher and confidence booster. When asked to compare their proficiency with technology at the beginning and end of the school year, educator ratings (out of 10) changed from a mean of 4.98 to 7.84, a statistical difference significant at $p < .001$. For many, the experience was mixed, with triumph in maintaining programs to meet families' needs, and the reality of the challenges faced in making that happen. As one educator said:

> So many things! It was an honor to work with families. It was exciting, draining, and everything in between to be able to design, develop, and implement online ECFE classes. I was discouraged often, feeling like I was missing the mark, and then I'd rebound and realize that the work we were doing was potentially the most important of my career to date. At times I was lonely. And I feel intense gratitude for my EC colleague who hung in there and worked so hard for families.

Recommendations for the Future

To address the ICT needs of families means continuing research that translates to practice that fully assists families with managing new digital realities. It also means that we do not assume that family professionals are supported or prepared to integrate technology in their practice. We must identify necessary competencies and standards that will drive preparation, professional development, and workplace conditions (Walker, 2016). The figure below show practitioners who work with families on the issue of technology use as the center of service delivery and as supported in their digital citizenship knowledge and skills by wider bodies of professional development and oversight:



There are additional ways to lend support to professionals. Ttechnology integration, for example, can be included in the higher education curriculum of family science, social science, education, and other applied fields. The University of Minnesota course accompanying this book — FSOS 3015 Families and Technology — is a way to stimulate critical perspectives on the many ways in which technology impacts children and family life. Association professional development efforts can include technology integration as a topic area, conference theme, podcast, or blog series. Online Community of Practices/Professional Learning Communities can focus on technology integration to offer peer ideas and assistance. And agencies can work individually or, as the NASW did, collaboratively to create standards for practice and advocate for their inclusion in licensing or performance. Additional recommendations include the following:

1. **Family professionals are naturally situated to aid children and families** with the growing responsibilities and challenges for decision-making and wise use of new media and interactions in a virtual world. This means seeing **technology as both a content area in practice as well as a means for service and education delivery.**
2. **Family professionals must feel comfortable and competent as digital educators and integrators**. Therefore, they need professional standards that guide preparation and practice. Standards developed for classroom teachers and/or the helping professions (e.g., social work, NASW, 2017) may inform recommendations for the range of those who work with families.

3. **Research on technology integration in family practice is still in its early stages.** Adapting and testing new ways to communicate, convey information to, assess, and encourage community with parents has yielded valuable information about the costs and benefits from instructor and learner perspectives.
4. Industry can **build on the expertise of family professionals in the design of apps and online platforms.** This includes parenting apps, for example, that may build on algorithms to tailor advice to parents and also include the rich context of childrearing decisions and influences. Those creating financial education apps, or interactive platforms to teach children money management, can work with family professionals with expertise in this area.

We now move to our final chapter: integrating policy with family practice and research on technology use and impacts.

11.2 REFERENCES

Alford, K. A., Denby, R. W., & Gomez, E. (2019). Use of smartphone technology in foster care to build relational competence: voices of caregivers and implications for prudent parenting. *Journal of Family Social Work*, 22(3), 209-230

American Association of Family and Consumer Sciences. (n.d.). Retrieved June 16, 2022, from http://www.aafcs.org/

American Association for Marriage and Family Therapists. (n.d.). About Marriage and Family Therapists. Retrieved June 16, 2022, from https://aamft.org/About_AAMFT/About_Marriage_and_Family_Therapists.aspx?hkey=1c77b71c-0331-417b-b59b-34358d32b909

Anderson, J., Rainie, L., & Vogels, E. A. (2021, April 5). Experts say the 'new normal' in 2025 will be far more tech-driven, presenting more big challenges. Pew Research Center: Internet, Science & Tech. Retrieved June 16, 2022, from https://www.pewresearch.org/internet/2021/02/18/experts-say-the-new-normal-in-2025-will-be-far-more-tech-driven-presenting-more-big-challenges/

Blum, D. (2021, January 12). Therapists are on TikTok. and how does that make you feel? The New York Times. Retrieved June 15, 2022, from https://www.nytimes.com/2021/01/12/well/mind/tiktok-therapists.html

Breitenstein, S. M., Gross, D., and Christophersen, R. (2014). Digital delivery methods of parenting training interventions: a systematic review. *Worldviews on Evidence-Based Nursing*, 11(3), 168-176.

Bullock and Colvin (2015). Communication Technology Integration into Social Work Practice. *Advances in Social Work Practice*, Vol. 16 No. 1, 1-14

Certified Family Life Educator (CFLE) Credential Standards & Criteria. National Council on Family Relations. (2020, July). Retrieved from https://www.ncfr.org/sites/default/files/2020-07/Final_Standards%20and%20Criteria%202020.pdf

Child Welfare Information Gateway (2020). How child welfare professionals access, use, and share information: Results from the National Child Welfare Information Study. Washington, DC: Children's Bureau, Administration for Children and Families, U.S. Department of Health and Human Services.

Churches, A. (2010). Bloom's digital taxonomy. Retrieved from http://burtonslifelearning.pbworks.com/f/BloomDigitalTaxonomy2001.pdf

Corralejo, S. M., & Domenech Rodríguez, M. M. (2018). Technology in parenting programs: A systematic review of existing interventions. *Journal of Child and Family Studies*, 27(9), 2717-2731.

Darling, C., Cassidy, D., and Rehm, M. (2020). The Foundations of Family Life Education Model: Understanding the Field. *Family Relations*, 69: 427–441 doi:10.1111/fare.12372

Davis, F.D. (1989). Perceived usefulness, perceived ease of use, and user acceptance information technology. *MIS Quarterly* 13, 319–340.

Day, J. J., and Sanders, M. R. (2018). Do parents benefit from help when completing a self-guided parenting program online? A randomized controlled trial comparing Triple P Online with and without telephone support. *Behavior Therapy*, 49(6), 1020-1038.

Family Life Education Content Areas: Content and Practice Guidelines. National Council on Family Relations. (2015). Retrieved from https://www.ncfr.org/sites/default/files/2020-02/FLE-Content-and-Practice-Guidelines-2014-objectives.pdf

Forgatch, M. S., Patterson, G. R., and Gewirtz, A. H. (2013). Looking forward: The promise of widespread implementation of parent training programs. *Perspectives on Psychological Science*, 8(6), 682-694.

Godfrey, R. (2016). Digital citizenship. Paving the way for Family and Consumer Sciences. *Journal of Family and Consumer Sciences*, 108(2), 18-22.

Hall, C. M., and Bierman, K. L. (2015). Technology-assisted interventions for parents of young children: Emerging practices, current research, and future directions. *Early Childhood Research Quarterly,* 33, 21-32.

Haythornthwaite, C., and Andrews, D. (2011). E-learning: Theory and practice. Thousand Oaks, CA: Sage.

Health Education Specialist certification – CHES®, MCHES®. NCHEC. (n.d.). Retrieved June 16, 2022, from https://www.nchec.org/

Hughes, R., Bowers, J., Mitchell, E., Curtiss, S. and Ebata, A. (2012). Developing online family life prevention and education programs. *Family Relations*, 61, 711 – 727.

International Society for Technology in Education. (n.d.) The ISTE standards. ISTE. Retrieved June 16, 2022, from https://www.iste.org/standards

Jones, D. J., Forehand, R., Cuellar, J., Parent, J., Honeycutt, A., Khavjou, O., ... and Newey, G. A. (2014).

Technology-enhanced program for child disruptive behavior disorders: Development and pilot randomized control trial. *Journal of Clinical Child and Adolescent Psychology*, 43(1), 88-101.

Kimmons, R. (2012). PICRAT matrix. http://roycekimmons.com/tools/picrat

Lebow, J. L. (2020). Family in the age of COVID-19. Family process. doi: 10.1111/famp.12543

Long, N. (2015). Future trends in parenting education. In J. Ponzetti (Ed.), Evidence-based parenting education: A global perspective (pp. 311– 328). New York, NY: Routledge.

Love, S. M., Sanders, M. R., Turner, K. M., Maurange, M., Knott, T., Prinz, R., ... and Ainsworth, A. T. (2016). Social media and gamification: Engaging vulnerable parents in an online evidence-based parenting program. *Child Abuse and Neglect*, 53, 95-107.

Mishra, P. , & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for integrating technology in teacher knowledge. *Teachers College Record*, 108(6), 1017–1054.

Morawska, A., Tometzki, H., and Sanders, M. R. (2014). An evaluation of the efficacy of a Triple P-positive parenting program podcast series. *Journal of Developmental and Behavioral Pediatrics,* 35(2), 128-137.

Myers-Walls, J. A., and Dworkin, J. (2015). Parenting education without borders: web-based outreach. In Ponzetti, J., (Ed.) Evidence-based parenting education: A global perspective. pp. 149-166. New York, NY: Routledge.

Myers-Walls, J. A., Ballard, S. M., Darling, C. A., & Myers-Bowman, K. S. (2011). Reconceptualizing the domain and boundaries of Family Life Education. *Family Relations*, 60(4), 357–372. https://doi.org/10.1111/j.1741-3729.2011.00659.x

Nagarkar, N. (2020, April 14). Digital citizenship for life after COVID-19. Medium. Retrieved June 16, 2022, from https://medium.com/skills-for-the-future/digital-citizenship-for-life-after-covid-19-ae95f818a87e

National Association of Social Workers (2013) Standards for Social Work Case Management. Retrieved June 15, 2022, from https://www.socialworkers.org/LinkClick.aspx?fileticket=acrzqmEfhlo%3d&portalid=0

National Association of Social Workers (2017) NASW, ASWB, CSWE & CSA Standards for Technology in Social Work Practice. Washington, DC. https://www.socialworkers.org/LinkClick.aspx?fileticket=lcTcdsHUcng%3d&portalid=0

Nieuwboer, C. C., Fukkink, R. G., and Hermanns, J. M. (2013). Online programs as tools to improve parenting: A meta-analytic review. *Children and Youth Services Review*, 35(11) 1823-1829. doi:10.1016/j.childyouth.2013.08.008

Papanastasiou, E. C., & Angeli, C. (2008). Evaluating the use of ICT in education: Psychometric properties of the survey of factors affecting teachers teaching with technology (SFA-T^3). *Journal of Educational Technology & Society*, 11(1), 69-86.

Piercy, F. P., Riger, D., Voskanova, C., Chang, W.-N., Sturdivant, L., & Haugen, E. (2015). What Marriage and Family Therapists Tell Us about Improving Couple Relationships through Technology. In Family Communication in the Age of Digital and Social Media (pp. 207–227).

Professional parenting educator competencies. NPEN. (n.d.). Retrieved June 16, 2022, from https://npen.org/Professional-Parenting-Educator-Competencies

Ribble, M. (2015). Digital citizenship in schools: Nine elements all students should know. International Society for Technology in Education.

Rosa, P., Johnson, A., Shorb, V., Jaeckel, G., Jackson, E., Graves, H., Enders, P., Repak, S., Smith, E., Steuer, T., Webb, S. T., & McCormick, K. (n.d.). Framework for Teaching Personal Finance . National Financial Educators Council . Retrieved from https://www.financialeducatorscouncil.org/wp-content/uploads/Framework-for-Teaching-Personal-Finance.pdf

Sciences, C. N. A. of. (2017, March 16). Information Technology and the U.S. workforce: Where are we and where do we go from here? Where Are We and Where Do We Go from Here? |The National Academies Press. Retrieved June 16, 2022, from https://nap.nationalacademies.org/catalog/24649/information-technology-and-the-us-workforce-where-are-we-and

Spencer, C. M., Topham, G. L., & King, E. L. (2020). Do online parenting programs create change?: A meta-analysis. *Journal of Family Psychology*, 34, No. 3, 364 –374. http://dx.doi.org/10.1037/fam0000605

Suárez-Perdomo, A., Byrne, S., & Rodrigo, M. J. (2018). Assessing the ethical and content quality of online parenting resources. Comunicar. *Media Education Research Journal*, 26(1)

Taylor, A. and Robila, M. (2018) Global Perspectives on Family Life Education: Synthesis and Future Directions. In M. Robila and A. Taylor (Eds). Global Perspectives on Family Life Education, https://doi.org/10.1007/978-3-319-77589-0_25 .

Taylor, T. K., Webster-Stratton, C., Feil, E. G., Broadbent, B., Widdop, C. S., and Severson, H. H. (2008). Computer-based intervention with coaching: An example using the Incredible Years program. *Cognitive Behaviour Therapy*, 37(4), 233-246.

Teo, T., Lee, C., & Chai, C. (2008). Understanding pre-service teachers' computer attitudes: Applying and extending the technology acceptance model. *Journal of Computer Assisted Learning*, 24, 128–143.

Turner, K. M. T., and Sanders, M. R. (2011). Triple P Online. Brisbane, Australia: Triple P International. Retrieved from http://www.triplep.net.

UNICEF. (2017). Children in a Digital World. United Nations Children's Fund.

University of MInnesota (2017). Minnesota Educator Dispositions System (MnEDS)™. https://sites.google.com/a/umn.edu/umn-dispositions-assessment-framework/home

Wadlington, E., & Wadlington, P. (2011). Teacher dispositions: Implications for teacher education. *Childhood Education,* 87(5), 323-326.

Walker, S. (2016). Creating the Future We Want: A Framework for Integrated Engagement in Technology Use in Family and Consumer Sciences. *Journal of Family and Consumer Sciences*. 11, 7-17. http://dx.doi.org/10.14307/JFCS108.2.7

Walker, S. (2017). Creating Parentopia: Design-Based Research to Develop an Interface for Parent Learning Communities and Networks. In Smith, B. K., Borge, M., Mercier, E., and Lim, K. Y. (Eds.). (2017). Proceedings of the 12th International Conference on Computer Supported

Walker, S. (2019). "It Depends:" Technology Use by Parent and Family Educators in the United States. *Educational Sciences*. 9(4). 293. Special Issue: The Future of Parent and Family Education. https://doi.org/10.3390/educsci9040293

Walker, S. (2020). Parent Learning as Community of Practice and the Potential of an Online Platform. In Progress in Education. Volume 62. R. Nauta (Ed.) Hauppauge, NY: Nova.

Walker, S. and Hong, S. (2017). Workplace Predictors of Parenting Educators' Technology Acceptance Attitudes, *Family and Consumer Sciences Research Journal*, 45 (4), 377–393.

Walker, S. and Kim, H. (2015). Family Educators Use of Technology and Influences on Technology Acceptance Attitudes. *Family and Consumer Science Research Journal*. 43(4), 328-342.

Walker, S. K., Lee, S. K., & Hong, S. (2021). Workplace Predictors of Family Educators' Technology Acceptance Attitudes. *Family Relations*, 70(5), 1626-1642.

Walker, S., Otremba, E., Jara Pachero, T., Moeller, M., and Morain, B. (2020). Parent reactions and parenting professional experiences in adapting ECFE for online delivery during COVID-19. Presentation to the Minnesota Association of Family and Early Education, September 25, 2020.

11.3 LEARNING ACTIVITIES

Professional standards related to technology integration

Consider the field or specific profession you plan to pursue or are already working in. Identify the technology standards of practice that have been offered. These are often available from professional associations, such as the National Association of Social Workers (NASW.org), the American Association of Marriage and Family Therapists (aamft.org), or the National Parent Educators Network (npen.org). They may also be present in license requirements for the profession set forth by an individual state. As you review these standards, do you feel ready if you were to be given a test today? Where you would go to get the knowledge and skills required? Will they come from your personal experience? From your training in school? On the job? Through professional development? Based on your own knowledge and experience of technology use by our society and from what you know of the profession, are the standards sufficient? Are there ways you think they could be improved upon? Who or how would you advocate for these changes?

Digital Citizenship application (1)

Ribble proposes nine elements of digital citizenship, below (see also Godfrey, p. 19). For each, propose a scenario in which you would see the element applied to family professional work. It might be the integration of ethical principles in the delivery of practice, or it might be a content area that would be taught or presented in work with families. Here are some examples of digital citizenship scenarios as applied to elementary education.

- Digital access: full electronic participation in society
- Digital commerce: electronic buying and selling of goods

- Digital communication: electronic exchange of information
- Digital literacy: basics of technology and its use
- Digital etiquette: electronic standards of conduct
- Digital law: electronic responsibility for actions and deeds
- Digital rights and responsibilities: freedoms extended to all in a digital world
- Digital health and wellness: physical and psychological well-being
- Digital security: electronic precautions to guarantee safety

Digital citizenship application (2)

Create a digital citizenship lesson to present to parents. Choose the age group of children the parents will have — young children, middle childhood (elementary age), teenagers. Consider whether the children or parents represent specific interests for learning and for technology use — those with disabilities, those who represent a culture or speak and write in a non-English language, those who may be migrants or immigrants or may be separated due to work or military service. Identify the amount of time that you'd have with the parents (and children, if they are included as learners) and the format for your lesson (in-person, online, hybrid). What content would you deliver? What outcomes for learning would you want to achieve? How would you facilitate their learning in ways that build on their own experience and interests?

Parenting educator technology competencies

With the Parenting Educator competency framework in mind (as discussed in the chapter), consider the content and practice needs related to technology use that a parenting educator might need. Consider the content of the book — from our use as a society; to differences in families; use by couples, children, and parents; in the workplace; for health and for money management. Consider both the required knowledge about human development AND about parenting to deliver

your practice. What content related to technology might you need to know? What do you need to KNOW about families use of technology that will be integrated into your work? Now consider how you deliver education — is it in person, in classes, online, through an app? Who is your audience? What do you need to be able to DO with technology to deliver your services effectively to families? Are there particular attitudes or dispositions that might be influenced by technology?

11.4 BLOG PROMPTS

Professionals who work with families use technology in their practice. With changes in our interactions and information sharing in virtual environments, the use of mobile devices, and the creation of applications we have yet to imagine, this use will become an even greater part of ongoing professional development, practice, and institutional and field policy landscape. How do family educators, scientists, service providers, therapists and counselors, program administrators, and others keep up? Whose responsibility is it?

Consider your thoughts about the use of laptops and other electronic devices in college classrooms, especially lecture classes, acknowledging the growing research indicating that note-taking is not effective, students are distracted, and technologies can be distracting to others. Although there are a number of reasons why policies might remain flexible, and devices used/encouraged, this doesn't take away from our need to explore ways that technology, in context, truly supports learning and instruction. As a college student, what does this mean to you? Do you bear responsibility for your learning and, if so, how do you manage your technology use in classes in ways that promote your learning and not a distraction? What expectations do you have for your university to offer you learning environments AND professionals that support your success in integrating technology or otherwise using it wisely? Do you see changes needed?

It can be asserted that family professionals who are on the front lines with families should model and encourage digital citizenship. Or one could argue that this is not the job of a family professional, that our work is about the content and practice of family life, not teaching about technology. What do you believe?

Imagine that you work for an agency that provides education and resources for grandparents raising grandchildren. You feel that an app would help grandparents easily track the children's developmental milestones, doctor's appointments, school records, and other information. You've done some investigation, but find only apps that seem overly complicated and aimed more at biological parents. You learn that grant money is available from the Brookstone Foundation for the development of innovation for this population. The proposal requires that you indicate how you'd go about designing the app. What would you do to create a piece of technology that would be useful to these families?

COVID-19 created the need for all family professionals to adapt the delivery of their services. Consider the three types of professionals discussed in this chapter: educators, therapists, and family service/case workers. Explore individual accounts of each type of professional. What similarities or differences in their experiences do you observe? What systemic, organizational, or public policy support might address their needs?

11.5 ADDITIONAL RESOURCES AND READINGS

Digital Citizenship

- Digizen: http://www.digizen.org/. "Raises awareness and understanding of what digital citizenship is and encourages users of technology to be and become responsible DIGItal citiZENS"
- Commonsense Media's digital citizenship: https://www.commonsense.org/education/digital-citizenship
  Provides an incredible number of resources on teaching children through grade 12 on 8 elements of being responsible and safe and kind online. These are excellent skills to build in adults too!
- Center for Media Literacy: https://www.medialit.org/
- DigCit Doctors: https://www.edvolvelearning.com/digcitdoctors.html
- And the framework for digital citizenship: https://www.teachdigcit.com/uploads/8/5/7/6/8576959/edvolve.dc.curricularframework.pdf
- Mattson, K. (2021). Ethics in a Digital World. ISTE books: https://my.iste.org/s/store

Professional Practice Standards Related to Technology Integration

- American Psychological Association: Guidelines for the Practice of Telepsychology
- National Association of Social Workers: Standards for Technology and Social Work Practice
- International Society for Technology in Education: ISTE Educator Standards
- AAMFT: Tele-mental Health for practitioners

About Family LIfe Education

- Darling, C., Cassidy, D., & Ballard, S. (2022): Family Life Education: Working with Families across the Lifespan. Waveland Press.

CHAPTER 12: SHIFTING THE CULTURE: POLICY, PRACTICE AND RESEARCH TOWARD HEALTHY FAMILY TECHNOLOGY USE

12.1 SHIFTING THE CULTURE: POLICY, PRACTICE AND RESEARCH TOWARD HEALTHY FAMILY TECHNOLOGY USE

We all do better when we all do better.

—— Paul Wellstone, Senator-MN

Never doubt that a small group of thoughtful, committed citizens can change the world; Indeed, it's the only thing that ever has.

—— Margaret Mead

Chapter Insights

- Policies involving the safe use of the internet, social media and digital devices have evolved over the last 30 years.
- While policies to keep children safe online are essential, they must not stand alone yet stand in complement to myriad other policies for children's health and well-being across the ecologies that influence their development.
- Areas of ICT policy include digital equity, digital privacy, platform accountability, digital ethics, digital competencies and digital culture.
- ICT policy exists on many levels, from the family, to nearby ecologies of schools and school districts, and public and private institutions, to policies affecting tech companies, and as set by governments and global non-governmental agencies including the United Nations.
- The policy development process applied to other matters can be used with technology, and is

a recursive process from understanding the agenda through policy implementation and evaluation.

- Taking a systemic view at policy in which it is integrated with ongoing research and practice with children and families is a way to shift the field of family science and practice. In that way, researchers are informed by the needs of practitioners and families, practitioners have a direct application to ongoing research and are supported by policies, and the policy level can monitor, synthesize and shape research in ways that move the needs of children, families and communities – and the professionals who serve them – forward.
- After reading this chapter, identify what you feel inspired by, the questions that remain for you, and the steps you can take for your own technology use to be more intentional.

Introduction

We complete our journey on technology and the family by addressing ways to implement positive change for families through policy. The quotes above capture the spirit of social justice in policy, and the potential power in coming together to identify strategy for the world. While public or social policy may seem to happen at the widest level of our eco-systemic view of families, policy can realistically occur at any level. Wikipedia offers the most general definition: "**Policy** is a deliberate system of guidelines to guide decisions and achieve rational outcomes."

This definition works well as we consider that policy can dictate laws and regulations "for the good of the people," yet can also guide the practices of a school district, company, or, smaller still, a household. It's essential to include policy in our critical view of families and technology because, as our understanding of its benefits and consequences evolves with the speed of innovation, we realize the need for guidance around decision-making to "achieve rational outcomes" that benefit all (or at least the majority).

For an excellent overview of family policy, readers are encouraged to watch Karen Bogenschneider's discussion: family_policy_lecture.

Think of children's safety online. Nearly 30 years ago, guidance consisted mostly of advice to parents about keeping children from exposure to predators in chat rooms. As a parent I vividly remember this in the 1990s when my daughter was interested in playing computer games and encouraged by her friends to explore the

internet. But with the explosion of social media, data sharing and privacy violations (some by family members), human trafficking, data tracking, and identity theft, policies and laws have been developed to address what tech manufacturers can and can't do, specifically for children under 13 years (e.g., Child Online Privacy Protection Act, or COPPA), what can and cannot be shared (e.g., Children's Internet Protection Act, or CIPA), and how children's rights can be protected. A global conference in 2022 focused on data and age-appropriate content in site design, digital literacy, and advocacy against child sexual abuse material (CSAM) online.

In terms of policy, a focus on technology and the family should be in the same conversation as a focus on the complex conditions that influence child and family well-being.

It's also important that, as we talk about policy with regard to technology and the family, we don't lose site of other policies valuable to the well-being of children and families. Just as our use of technology for communications or for information gathering is used in complement to other media and sources, policies that affect the well-being and safety of children and families act in complement to other policies. [1]

In Chapter 5, for example, we discussed concerns over technology use by teens relative to their wider ecology, observing that those demonstrating risks from technology are likely responding less to the platform or device and more to their environment. Stressors of living in conditions that can affect physical and mental health will only be exacerbated by negative influences from social media, violent videogames, or the lure of apps that encourage endless attention. Technology use and access is part of the wider scope of policies that support families. Technology-focused groups such as Commonsense Media also advocate for more global policy affecting child well-being, and associations that may advocate for technology rights and protections include these as a larger scope. See, for example, the American Psychological Association and the Society for Research on Child Development.

Throughout the book, we've discussed policies regarding digital technologies and families. These have been a blend of legal protections and guidance toward "rational outcomes," and many align with Commonsense Media's resources for advocacy areas of Digital Equity, Digital Privacy, and Platform Accountability.

- Chapter 3: internet access through infrastructure supports worldwide
- Chapter 4: protections related to safety, trafficking, and tech-facilitated intimate partner biolence
- Chapters 5 & 7: child protection laws; developmental readiness for children's smartphone ownership; consequences of cyberbullying

1. This point has been made about other policy foci that don't address the full scope of the issue. For instance, Stephanie Murray in the Atlantic (2022). recently wrote about policies for childrens academic achievement that ignore parents' and family contributions to learning.

- Chapter 6: ethical practice for parents around "sharenting"
- Chapters 7 & 8: family media planning
- Chapter 9: work and family policies (e.g., work-family leave, child care support)
- Chapter 10: HIPPA; privacy and security of health and financial information
- Chapter 11: license, practice, and preparation to practice guidelines for family professionals, including licensed parenting and/or family educators, social workers and family service professionals, and couple and family therapists.

The discussion here focuses on elements of policy as it relates to technology use, evidence of policy that occurs on many levels, and how policy intersects with the eco-system of personal technology use, research on family use and outcomes, and community-level practice that influences family well-being.

Areas of Technology Policy

In its 2017 report, **Children in a Digital World** (p.11), the **United Nations** offered **six priority actions**:

1. Provide all children with affordable access to high-quality online resources.
2. Protect children from harm online — including abuse, exploitation, trafficking, cyberbullying, and exposure to unsuitable materials.
3. Safeguard children's privacy and identities online.
4. Teach digital literacy to keep children informed, engaged, and safe online.
5. Leverage the power of the private sector to advance ethical standards and practice that protect and benefit children online.
6. Put children at the center of digital policy.

Livingstone and Blum-Ross (2020) offered further **recommendations for support to parents' involvement** in children's digital futures (pp. 191–194):

1. Provide support for parents that encompasses the digital environment.
2. Offer parents a realistic vision in public and media discourses.
3. Recognize the contribution of parents in educational settings.
4. Pay attention to the design and governance of the digital environment.
5. Make room for parents' voices in policymaking.
6. Make sure the policy, and the design of technology, is based on evidence.

We can add to these recommendations the myriad environments, actions, and competencies for professionals outlined in the previous chapter, integrating technology in their content area knowledge and in their skills for delivery.

Across this ecology, then, we see a variety and types of policy actions relevant to technology and family well-being.

Digital equity

Digital equity focuses on reducing the digital/skills/access/information divides by ensuring greater access to the internet, to devices that connect to the internet and for communication, and to the training and accommodations needed so that all can use technology with the same level of comfort and skill. Commonsense Media offers a state-by-state view of information on digital access. For Minnesota, for example, it states that as of October, 2022,

> 249,845 students and 6,379 teachers lack adequate internet access. Up to 162,607 students and 1,046 teachers are without the technology and devices at home to support distance learning. About 22% of the students who lack access are Black, Latinx, or Native American.

Digital equity policies include:

Making broadband internet accessible. Increasing internet access not only benefits individual households, but improves family access to health care, education, and employment. One such program in the U.S. is the Federal Communications Commission (FCC)'s Lifeline program. The FCC also makes funding available to restore internet access after an emergency, and offers other internet access initiatives. And as noted in Chapter

3, global groups advocate for universal internet access — though given public opposition and infrastructure costs, this may be a significant challenge.

Training and material supports. Groups like the National Collaborative for Digital Equity have programs that offer refurbished laptops, mentoring, assistance to libraries, and company incentives and youth development programs. They include a database of digital equity resources that includes funding ideas, information on early literacy on technology, and help for libraries.

Making digital applications and devices accessible to accommodate language, literacy, and ability. The U.S. Department of Labor's Office of Disability Employment Policy (ODEP) / Center of Development Expertise for Accessibility Task Force defined digital accessibility as "the ability for a user to perceive, understand, navigate, and interact with hardware, software, websites, and documents regardless of age and ability." As indicated, this goes beyond ensuring access to ensuring that a device or the internet is usable and navigable, taking into consideration the range of abilities individuals possess. An excellent example of policy and procedures for full (employee) access comes from the Opportunities for Ohioans with Disabilities: Digital Accessibility and Accommodations: Learner's Guide.

Digital privacy

The U.S. Department of Commerce defines digital privacy as "the protection of personally identifiable or business identifiable information that is collected from respondents through information collection activities or from other sources and that is maintained by the [agency.]" [2] A number of federal regulations are in place for digital privacy and safety, particularly as they regard children. Digital privacy is often scope of technology policies proposed and enacted by companies, agencies, and schools for the protection of its citizens. These are discussed below.

"Slide_TechnologyGivesKidsPower" by William M Ferriter is licensed under CC BY-NC 2.0.

Federal actions to ensure children's digital safety include the Child Internet Protection Act (CIPA) and the Childrens Online Privacy and Protection Act (COPPA). The U.S. government's Protecting Children in the 21st Century Act ensures education about online threats. Though non-specific to e-documents,

2. The Department of Commerce's digital privacy policy is stated here.

FERPA (Family Education Records Protection Act) and HIPAA (Health Information Portability and Accountability A`ct) protect the sharing of personal information related to school records and health information, respectively.

Microanalytics offers a good overview of digital privacy, including specific threats such as cookies, phishing, and unsecured browsing. At home, parents need to be aware of privacy protections on all devices, including smart toys, smart homes, and virtual and augmented reality, and of advertisements targeted at children.

As many schools moved to distance learning, Commonsense Media offered recommendations for families on digital privacy. These speak to safety and advocacy, and even lean toward suggesting family policy for digital privacy.

1. Make privacy a family value. Commonsense Media has a number of resources to help your family better understand how to protect your privacy and why it's important, including an FAQ, advice articles, and classroom lessons on privacy and security.
2. Be careful what you share online about your kids and their classmates. It's worth knowing the facts before posting pictures or letting other people post pictures of your kids. One important rule of thumb with distance learning: Don't post photos of your kid attending online class to your social media if their classmates are visible.
3. Learn about parental controls to minimize distractions and data collection. You don't need to be an expert at managing technology to help your kid stay safe and focused online. Check with your school's technology department to find out what safeguards and filters are already in place and what additional parental controls you can set up.
4. Know whether classes may be recorded or monitored. You should understand your school's policies regarding video-conferencing and classroom monitoring. It's useful to know how your kid's teacher will track student attendance or progress and what this means for their grades. And be sure that your kid — no matter how old they are — knows the expectations for video-chatting in online classrooms.
5. Learn more about your school's educational apps and platforms. Particularly now, schools have an important job in safeguarding student privacy. Parents and caregivers should get familiar with their school's tools, try to learn about the risks of the top distance learning apps, and ask the school directly how they are protecting kids
6. Ask questions, and exercise your privacy rights. Remember that you have rights to access your kid's education records and any information that apps collect from your kid under federal and state laws.

Platform accountability

Platform accountability policies hold websites — and social media companies in particular — responsible for monitoring the content shared online that is offensive and stimulates hate crimes. One group fighting on this issue is Stop Hate for Profit. In mid-September 2022 the White House held a summit on hate-fueled violence, which included discussion of the spread through social media.

Digital ethics

Digital ethics policies address behavior on the internet and digital devices. While this is a broad area, and includes privacy and safety actions, digital ethics covers issues beyond these specific elements. For example, in Chapter 7 we discussed the case of a father who went online in a viral video to complain about the racist bullying his daughter endured. As part of that rant he outed the father of the bullying children, including the man's name (though stated that he'd informed the man ahead of time). While we can see this as an act of desperation by a caring father, we might also question its ethics considering the consequences that befell the bully's father in the 24–48 hours after the initial video was posted. Digital ethics often involves cases in which there are unintended consequences. E-portfolios, for example, have become a popular and convenient way for students and professionals to share their work. Yet as Wilson et al. (2018) discuss, too often individuals cited in that work are exposed when permissions have not been secured. Reyman and Sparby's 2019 book on Digital Ethics presents a number of related cases.

Digital competencies

As presented in the previous chapter, professions — including the family professions — identify standards of excellence for their practitioners. These standards are translated into competencies, and university preparation programs and programs overseeing licensure and other accreditation ensure that pre-professionals demonstrate those competencies. The last twenty years have seen the addition of digital competencies in the practice standards of professionals. These include the nine categories of Ribble's Digital Citizenship and competence in ensuring that their practice is ethical, safe, protects clients, and effectively deploys the internet and digital media as tools in the delivery of service.

Digital culture

While less specific the policies discussed above, policies that speak to a digital culture embrace the new world of ICT as holding possibilities yet needing intention and shaping. When we examine the professional competencies for professionals, such as those reviewed in Chapter 11 for social workers, we see a wholesale adoption of a new way of working for practitioners.

Embracing this cultural shift means offering guidance through policy across all dimensions of practice, and ensuring that policies are worded to include an understanding of new virtual worlds, devices, means for communication and social interaction, and the need for re-training and joint decision making. Shifting environments to embrace the digital culture means collaborative, visionary, and informed planning, policy, implementation, and assessment.

> Consider your university or a place where you work as a setting for shifting the culture to embrace technology. What is the vision at the end of this shift? Who would be affected? How would the institution get there? What policies would be needed to create a digital-positive culture?

Outlets for Technology Policy for Children and Families

In addition to specific laws enacted to protect children and others from invasions of privacy and harm, such as COPPA, CIPA, FERPA, and HIPPA (fun saying them, isn't it? 🙂) policies related to technology use can be found from global to local levels.

United Nations

> The Department of Economic and Social Affairs (UNDESA) Division for Inclusive Social Development (DISD) identified digital technology as one of four megatrends facing families (along with urbanization, migration, and climate change). In 2021, I prepared a report for the UN on digital technologies' impacts on the family, specific to parenting education and work and family balance, and recommended a number of policy actions specific to these two areas (and detailed in Chapters 11 and 9, respectively).

The United Nations more broadly promotes Sustainable Development Goals (SDGs) that address a wide range of issues facing the world's population. Equity and access for families are key considerations for SDG 3 (health care) and SDG 4 (education) targets. As shown to the right, SDG4.4 deals with ICT skills, with an indicator based on the proportion of the population possessing those skills. Fostering families' access to technology in developing countries, including those in Africa with the least internet coverage, would help address SDG 9, which promotes inclusive and sustainable industrialization. Similarly, ensuring wider and more equitable access for global families will target the need for information for sustainable living (SDG 12).

Target 4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship

Indicator 4.4.1: Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill

National agencies and associations

Professional associations, including the American Psychological Association (APA), the American Association of Marriage and Family Therapists (AAMFT), the National Council on Family Relations (NCFR), and others, have advocacy arms that provide information on legislation and on action toward policy creation or enactment.

The National Association of Social Workers, for example, offers this guidance in their 2021 Federal Blueprint for Social Welfare Policies:

NASW calls on national leaders to:

- Make telehealth expansion under COVID-19 permanent, including removing geographic or site restrictions, allowing the use of audio-only devices, and ensuring parity in payment with in-person service payment rates.
- Expand internet connectivity for underserved households.
- Unlock government data to drive solutions to social problems by promoting the accessibility and mining across agencies of administrative records.

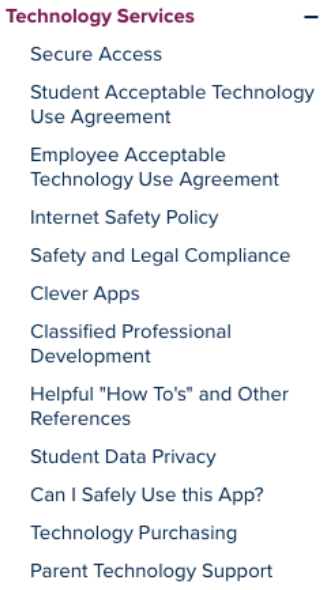
The International Society of Technology in Education promotes policy in the following areas:

- Educator preparation and professional development
- Broadband internet for learning
- Student privacy and security
- Digital citizenship
- Higher ed modernization
- Computer science and computational thinking

Smaller entities, such as school districts and companies, may have technology policies that primarily act as legal documents to outline safe use. These policies point somewhat inward, conferring guidance and protections for those within the scope of the agency. According to the Sunstate Technology Group,

> A Technology Use Policy is a contract between a business and its employees, contractors, vendors and anyone else who is given access to the company's technology assets (desktops, laptops, phones, software, network, files, etc.). The policy outlines exactly how the technology can be used as well as the consequences for unauthorized use. It's a good idea to go through the policy with every employee at onboarding and annually thereafter.

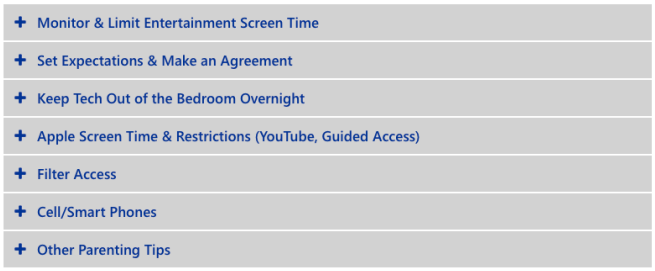
School districts



The Roseville (CA) school district offers a comprehensive technology policy , which includes a technology plan for the school district along with actions guidance on a number of areas including security (access, internet safety, student digital safety), employee training, agreements on use for students and for staff (in English/Spanish) and support for parents detailing conditions for home-based use of school software and other technology; see the list at left. Here is a sample student agreement in English. The terms of the agreement relate to use of technology "in a safe, responsible and proper manner in support of instructional programs," and for the rational outcomes defined as "for the advancement of student learning." As with many legal agreements (the school district being an agency of the city or state government), definitions are offered, conditions are stated, and penalties are listed, here ranging from removing the student's account to legal action as appropriate.

The area of student data privacy includes a lengthy list of applications approved for use by the school district. Internet safety ensures CIPA compliance, and safety and legal compliance offers summaries of CIPA, COPPA, and the Family Education Records Protection Act (FERPA).

The Minnetonka School District (MN) offers de tailed advice for children and parents on digital safety, indicated at the right. The Stillwater Public Schools (MN) make a clear point about ensuring access for all learners as part of their education technology policy. And Sonia Livingstone offered this salient critique on setting school-based technology policy.



Companies/Industry/Non-profits

Companies also have technology-related policies, many that relate to data security and safe use. These have become so prevalent that template documents are now available for a number of policies. This is a sample from the company Astra-Zeneca.

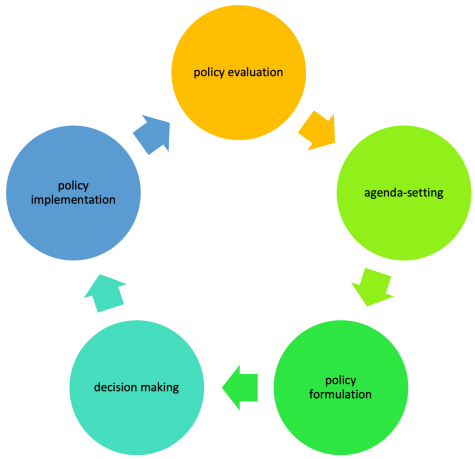
Technology industry

In addition to policies used with their employees for data safety and security, technology company *product policies* can ensure user safety by protecting data, prioritizing parental controls, advocating for truth and against hate speech online, funding independent research, designing humane products, and stopping tracking of and marketing to children (Commonsense Media). The degree to which these companies create and follow policy may relate to their dependence on the financial bottom line. Why would a social media platform be motivated to change the algorithm that pushes content to users that might be harmful to mental health, yet keeps the user engaged? Whose job is it to incentivize, monitor, or sanction these companies? Questions arise on the role of the federal government when tech companies fail to monitor or control content (which, admittedly, is a tricky thing).

Family

Family-level policy on technology is a significant step toward collectively maintaining standards of safety and healthy use. All members weigh in and clarify desired outcomes that reflect individual and family well-being, and agree to actions that result in those outcomes. Although there is plenty of guidance for parents on ways to monitor their children's use and promote safety, a whole-family technology use policy includes adult behaviors as well. This example from Judith Kohlberg (2021) nicely covers elements of a family technology plan and ways to create it collaboratively.

The Policy Development Process



Adapted from Hawlett & Geist (2012)

As indicated in the figure to the right, the policy development process involves a series of steps (Hawlett & Geist, 2012), all of which are applicable to creating technology policy, regardless of the jurisdiction or level. The first three steps may be considered policy development, with implementation and assessment completing the cycle. As with any cyclical action, information gained from the evaluation is further integrated with ongoing policy formation and implementation.

Agenda setting establishes the issue at hand and sentiment for the need to create policy. Essential is that all key informants and decision makers are heard during this stage.

Policy formation occurs as key actors construct a policy reflecting the interests of the community and, as Hawlett and Geist (2012) observe, "contingent on the nature and the configuration of the policy community and network in the specific sector concerned" (p. 19). Often, research is conducted and evidence brought forward about the issue, the pros and cons are considered, and actions recommended. Stephanie Schaeffer's 2001 Understanding Research: Top Ten Tips for Advocates and Policymakers remains a critically helpful guide in assessing the trustworthiness of research (including that published online) to be used as evidence for a policy. Even deliberations at local levels, including the family, should be based on evidence and reasoned thinking. Oftentimes for wide-scale technology policy, data on internet access, technology use and impacts will be used as a foundation for decision-making (e.g., UNICEF, 2016a, b, 2020).

Decision-making, while often subject to small- and large-scale politics, is ideally based on a rational approach to policy making, with policy constructed and implemented to reach rational conclusions. As the Center for Effective Services (CES) in Dublin, Ireland, observes, "Political issues include getting buy-in, setting a vision and managing opposition." Decision-making also takes into account the steps required to lay out the policy in technical detail for implementation planning, and those that may relate to regulatory integration.

Implementation of a policy puts into place the priorities and actions stated in the policy. It is essential, however, that the policy development process has culminated in a clear road map for efficient implementation. Imagine the family whose technology policy is that "we respect each others use of devices." It's a nice sentiment, but it gives little basis for implementation. The difference in policy setting and implementation is intention vs. action. At the least, according to the CES, there should be leadership, communication, and feedback. Leadership can affect and deploy existing policies, resources, structures, and programs. Communication occurs across the system to provide ongoing reports of action and feedback (including positive reinforcement and cheerleading internally and to stakeholders when necessary). Feedback "should be established between policymakers and front-line practitioners once implementation has begun, to ensure the policy is being implemented as intended, unplanned consequences are addressed efficiently and to support the learning capacity of the system" (CES, 2022). [3]

> Too often, a weakly phrased and overly general policy leads to chaotic implementation.

Evaluation of policy (according to the Centers for Disease Control 2012) applies evaluation principles and methods to examine the content, implementation, or impact of a policy. Evaluation is the activity through which we develop an understanding of the merit, worth, and utility of a policy (p. 1). As this indicates, evaluation is an ongoing process that checks the quality of the policy as written, the steps in implementation,

3. Readers interested in CES' complete policy implementation guide can find it here.

and the effect. Perhaps at its most basic, policy impact evaluation can be sitting back after a policy has been in place and implemented for a while to ask if a difference has occurred (as intended by the policy).

CDC policy overview

It is up to those setting and implementing the policy to determine what the outcomes might be, whether they be in the short term or the long term. A school district technology policy, for example, may seek more family engagement through its social media platform. In the short term, this might be measured through analytics of platform use, including quantities of parents, and subsets that represent population groups. Longer-term impact might be indicated through engagement that traverses the virtual and physical landscape, with family feelings of connectedness, participation in school policy, and engagement with their childrens' teachers observed across families representative of the school community.

As the National Collaborating Centre for Public Policy out of Canada observes in their guide to policy evaluation (2012), it is also important to observe the unintended consequences [4] (and benefits) from policy implementation. As discussed in this book, attention to policies regarding technology — information and communications technologies, learning technologies, digital technologies, and the like — has grown over the years. Readers may find that groups such as the OECD (Organisation for Economic Co-operation and Development) or the World Bank can be relied upon to document the impact of governmental or educational policies.

Intentional Integration of Policy with Research and Practice

Research is critical for our understanding of phenomena and, as often said, we have learned a lot but have so much more to learn. Our research needs to keep up with technological changes and innovations; preferences and uses by consumers; differences by the many demographic dimensions that characterize individuals,

4. As Sonia Livingstone observes, sometimes tech policies aimed at children can implicate their caregivers in not-so-positive ways

families, and societies; and the many contexts (e.g., work, school, leisure) of family life. It needs to close the gaps in our current knowledge, moving beyond convenient college student, higher-tech, and white higher-SES samples, especially those in the U.S. and other "WEIRD" countries, and explore the range of populations of families and technology users. And it needs to use up-to-date research methods and statistical techniques to ask the questions that, to date, we haven't even considered.

Research, however, isn't enough. For any family research study we must ask, how does this finding inform practice with families? How does it contribute to ways to make families' lives safer and more equitable? Practitioners and policy makers must partner with researchers to ask these questions (and be incentivized to the applied nature of such investigations). Traditionally, this integrated perspective has been the domain of health and public health practice (Brownson & Jones, 2009), education (Read, 2010)) and criminal justice (Lauren, 1997).

An example from the last chapter provides a good example of policy utilizing research findings. Research has identified ways in which children learn effectively (i.e., understand content and gain cognitive and behavioral skills and attitudes and dispositions) with technology and with which technology, when, and how. It also informs how to teach with technology, including how to differentiate instruction and how specific technologies can be effective (see, for example, the quick turn to Zoom during COVID-19). Such research informs practice by teachers, and also informs policy. A professional association (like the International Society for Technology in Education, ISTE) reviews the research and establishes standards, not only for teachers, but for students, administrators, and teacher coaches. These standards inform state licensing policy, which defines the set of competencies required for licensure, in this case, specific to the use of technology and digital literacy. Yet these policies do more than dictate practice competency. Through its influence on statewide/national and international practice, . this more macro level of policy and guidance also promotes a *culture* of technology integration, a culture which affects professional development, employment practices, and occupational supports. Over time, the attitudes and skills of professionals rise to this standard of expectation because their actions are not isolated, but part of a systemic response. This raises the probability that any family working with that professional will be met with a technology-forward attitude, and that practice will accommodate the families' needs.

a more macro level of policy and guidance also promotes a *culture* of technology integration, a culture which affects professional development, employment practices, and occupational supports

Integrating research, practice & policy as a framework toward collective action on family and technology

In 2016 I authored a piece for the *Journal of Family and Consumer Sciences* titled Creating the Future We Want: A Framework for Integrating Family and Consumer Sciences Research, Practice, and Policy on Technology Use (Walker, 2016). The framework was informed by other systemic models, such as the Head Start Family, Practice, Community Engagement framework (Office of Head Start, 2011), which links wider policy with practice to influence direct and indirect outcomes. With regard to family engagement, parenting education and parenting support are a direct outcome of policy and practice efforts (practice that includes supports to teachers); the influence parents have on their children's academic achievement and development is an indirect outcome of policy and practice engagement work.

In the case of our field addressing technology, I proposed that, "to create the future we want," we take a systemic approach to technology, rather than allowing it to be up to the whims of those interested in using tech, to occur in a piecemeal and uncoordinated fashion, and to be left only to programs with the resources to deploy technology. I became passionate about this because, after a decade of playing in the sandbox with my colleagues in education, where technology was heralded as a new tool for learning and instruction and where I witnessed family professionals literally "left to their own devices" (Walker, 2019), I decided it was time that we step back and create a culture of technology in our practice — one that regards the value of our ongoing research, respects the needs of practitioners, and embraces a systems approach to implement lasting change. Readers are strongly encouraged to read the article for component-by-component explanations.

To create the future we want, we need to take a systemic approach to technology, rather than allowing it to be up to the whims of those interested in using tech, to occur in a piecemeal and uncoordinated fashion, and to be left only to programs with the resources to deploy technology.

Here is an overview of the systemic framework offered in that paper:

Research on technology that focuses on related dimensions of a) technology use as demonstrated by access, comfort, and skill, and b) individual and family processes and outcomes.

- Technology use research variables include:
    - user characteristics (demographics, tech attitude, comfort, skill),
    - technology (type, context , characteristics), and
    - functions and purposes for technology use (e.g., communication, entertainment).
    - Works backward: presents the outcomes desired, then the actions which directly influence the outcome.
- Process and outcomes facilitated by technology include:
    - Individual family member well-being,
    - Family well-being and satisfaction,
    - Individual and family processes (e.g. learning, communication, social capital, connectedness), and
    - Outcomes external to the individual or family (e.g., technology developed, community well-being)

Professional Impacts Areas and Delivery Strategies Related to Technology

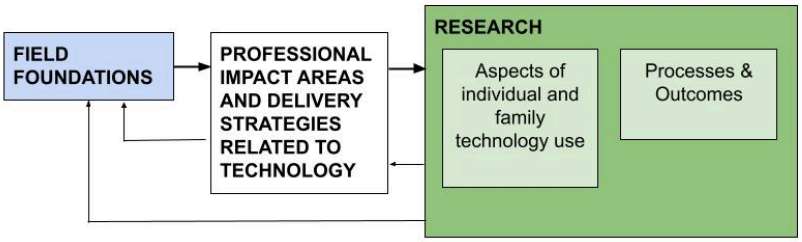
- Individual and family impact areas
    - As a knowledge area (to promote balanced, effective use)
    - As a skills area (to promote effective use)
- Impact strategies
    - Technology employed as effective practice (e.g., instruction, program design, counseling)

Field Foundations Related to Technology Integration

- Training: preparation of professionals on the use of technology (preservice, inservice)
- Standards for technology use in practice
- Maintaining and promoting quality research through methodology, summaries, directions

- Theoretical and conceptual models to frame research, practice, and policy

The framework is not linear, but interactive:



Research on technology use and family processes and outcomes informs:

(1) the design of technology to aid service delivery and effectiveness,

(2) the promotion of effective use by individuals families through knowledge and skill,

and

(1) the development and advocacy for policies regarding tech use by families, and

(2) the coordination on research methodologies and conceptual frameworks.

Research on effective use of technology in practice, and on technology as a content and skill outcome area for professionals, informs the need for field support and standards for training, implementation, guidance, workplace assistance, and regulation.

Field foundations, which hold an integrative understanding of technology use by families and the role that practitioners and policy play in effective technology use by families, enact a vision for positive family and individual outcomes by:

- promoting effective knowledge and practice by professionals AND
- advocating for progressive public policies, and – promoting quality research on practice and by families

The essential point of the framework is that as a family field (this holds for family service, family education,

and family therapy), our research on technology use and impacts informs our practice so we may best serve families, and our foundations are inclusive, visionary, and integrative.

This is only one of many possible scenarios in which our field looks broadly at technology as an influence on family life, and on practice and policy. There are many ways to bring about progressive change, yet it is critical that we address the topic with the complexity and future thinking it deserves. Our ten truths about technology, covered in Chapter 1, remain truths. Our global world will continue to evolve, technological change will continue to impact family life in ways we have only begun to imagine, and the call for research to investigate the use and impacts on family and child development processes and outcomes will only get louder.

In Conclusion

As I close out this book, it is my fervent hope that we indeed take technology seriously, no longer keeping our heads in the sand or treating it as something to be feared, something for other fields, or something that we use in some domains (such as our teaching) but cannot translate to influences on the populations we care about. Whether our interest is in special populations of children or families (e.g., military families, transgender youth, Hmong divorced couples), information and communications technology impacts their lives. Usually for the better. And if our work is in supporting practitioners (or supporting ourselves as practitioners), we must advocate that resources and training and standards for our work be created and updated.

If we look at ourselves as future participants on this earth (i.e. Salk's 'good ancestors'), and as practitioners, researchers, administrators and policy makers, how can we not be interested in the ways that ICT influence us, and ways that we can be — and help others to be — more intentional in our use, alone, together, and as a global society.

I hope that reading this book has inspired you to ask how technology shows up in our field, and question how it can be more present as a topic in what we teach and in our lines of research. If we look at ourselves as future participants on this earth (i.e. Salk's 'good ancestors,') and as practitioners, researchers, administrators, and policy makers, how can we not be interested in the ways that ICT influence us, and the ways that we can be — and help others to be — more intentional in our use, alone, together, and as a global society.

12.2 REFERENCES

AAFCS. (2015b). Preprofessional Assessment and Certification in Broad Field Family and Consumer Sciences. Alignment to 21st century student outcomes developed by the Partnership for 21st Century Skills. Retrieved from http://www.aafcs.org/res/Credentialing/prepac/Alignment/Broad_Field_Crosswalk_21st_Century_Skills.pdf

Araral, E., Fritzen, S., Howlett, M., & Ramesh. M (2015). (Eds.).Routledge handbook of public policy. London: Routledge.

Head Start Parent Family Community Engagement Framework. (2006). https://eclkc.ohs.acf.hhs.gov/policy/im/acf-im-hs-11-06

Hung, M., Conrad, J., Hon, S. D., Cheng, C., Franklin, J. D., & Tang, P. (2013). Uncovering patterns of technology use in consumer health informatics. *Wiley Interdisciplinary Reviews: Computational Statistics*, *5*(6), 432-447.

Reyman, J., & Sparby, E. M. (2019). *Digital Ethics*. New York-London: Routledge.

UNICEF (2020) UN: creating policy including technology use related to teen mental health: https://blogs.unicef.org/evidence-for-action/adolescent-mental-health-using-a-participatory-mapping-methodology-to-jointly-identify-key-topics-questions-and-priorities-for-future-work/

UNICEF (2016a) UN: https://blogs.unicef.org/evidence-for-action/evidence-based-policy-child-internet-use-latin-america/

UNICEF (2016b) UN: research efforts to inform policy: https://blogs.unicef.org/evidence-for-action/piloting-research-toolkit-child-internet-use-rural-south-africa/

Walker, S. K. (2016). Creating the Future We Want: A Framework for Integrating Family and Consumer Sciences Research, Practice, and Policy on Technology Use. *Journal of Family & Consumer Sciences*, *108*(2).

Wilson, C. B., Slade, C., Kirby, M. M., Downer, T., Fisher, M. B., & Nuessler, S. (2018). Digital Ethics and the Use of ePortfolio: A Scoping Review of the Literature. *International Journal of ePortfolio*, *8*(2), 115-125.

12.3 LEARNING ACTIVITIES

Integrating research, practice, and policy

Consider one of the topics in the list below. A) Suggest a clear research question related to the topic, indicating at least two dimensions of technology use and specifying the family processes and/or outcomes being studied by the research. Be sure to include ideas from early in the book about our understanding of family dynamics and of technology use. B) Identify ways in which a practitioner would make use of that research with families. How might we see that professionals employ that knowledge from the research in practice? C) Finally, considering the type of practitioner and/or the research, indicate the role played by policy or an organization to provide support to that practitioner on that topic. Be as specific as possible.

- College students communicating with their parents using texting.
- Fathers and their sons playing videogames together
- Schools using online platforms to share grades and school information with parents.
- New mothers using Facebook to gather information about infant feeding.
- Couples using a money management app for their household finances.

Family Impact Seminar brief

The Family Impact Seminar process is an amazing way for professionals and citizens to inform policy makers on issues related to families. Research impact reports are created that summarize issues and identify potential policy issues. See, for example, this list from the Purdue Family Impact Seminar.

You'll notice that there's no topic related to technology.

- Create an outline for a Family Impact Seminar research brief on technology and the family. Consider what background research you'd include and the policy areas you would promote.
  OR
- Review the existing topics. Would you enhance any of them with research or policy recommendations related to technology?

Policy formation

Policy making is not for the faint of heart. It takes a deliberative, evidenced, collaborative process to articulate policy clearly, and with enough information to guide implementation. Policy implementation takes leadership, communication, and ongoing assessment to ensure that all elements and players are fulfilling policy tasks. Review the chapters in the book and the topics covered. From what you've read, as a group, identify an issue around which policy would be created. You may want to take on different roles — for example, if you are setting technology for a school, your roles may be that of school board member, principle, teacher, student, and parents.

1. What is the topic?
2. What is the level of policy? (For whom is the policy proposed?)
3. What are the conditions the policy is intended to affect? Will this set well politically with all players and among those involved with and influenced by the policy?
4. What are the realistic policy actions? Now refine what you've written to make them cost-effective, time-efficient, and with the biggest payoff for the most people.
5. How will the policy be implemented?
6. How will you know the policy is successful? What might you learn that will help you revise implementation or elements of the policy?

Context-specific Policy formation

This article from BBC describes a village in India that mandates a time each day when TV and the internet is turned off. This is to encourage family time. According to the article,

> "We decided at the village meeting on 14 August – the eve of India's Independence Day – that we needed to stop this addiction," Vijay Mohite, president of the village council, told BBC Hindi. "From the next day, all television sets and mobiles were shut down when the siren went off."

What kind of technology policy might a group or jurisdiction you are part of, enact?

As a group, identify a jurisdiction you are familiar with – your home town, your high school, the company you work for, the sports team you play with. Each person take a role: parent, employee, director, player, owner, etc. In your role, is there a socially progressive policy regarding technology that would benefit the whole group, and of course, you? As a group discuss policy options until you land on one you all agree on.

Using the guidelines for consideration from the activity above, identify the purpose for the policy (what are you trying to change? improve?) and then what it might require to implement such a policy – again so that each member of the team/organization/town/high school or whatever can follow it?

12.4 BLOG PROMPTS

Reflect back on the content from the beginning of the book about technology and society, tech's functions, and warnings about its benefits and its challenges, thinking through to the many ways in which families use and are affected by technology, and to professionals' use. Now that you've reached the end of the course and have reflected on myriad topics affecting your own use, your use with friends and family, and future perspectives, how, if at all, have your perspectives about technology changed? If things haven't shifted for you, why might that be? Are you inspired to make any changes? How about your role as family professional? How do you see yourself integrating technology in your practice and in ways that build on new research?

In 2018, Pew reported that a majority of people in the U.S. disagreed that the internet has been good for society. What do you believe, and why?

This piece in Bold cites researcher Candace Odgers, who advocates for closing the digital gap for youth (Odgers was also mentioned in Chapter 5). She says that "closing the digital divide will require public and private investments in infrastructure, equipment, and digital literacy across multiple sectors" and "will need to involve young people in designing solutions that will stick." Recommendations target parents, teachers, the tech industry, and policymakers. And they focus on improving youth well-being and mental health, and on ensuring privacy and security. This is a tall order. These policy recommendations cut across home, school, community, industry, and government. How might such a shift in digital equity and youth well-being be possible? Is it top down?

12.5 ADDITIONAL READINGS AND RESOURCES

Family Policy

- Bogenschneider, K. (2014). Family Policy Matters: How policymaking affects families and what professionals can do (3rd ed.). Mahwah, NJ: Erlbaum.
- Centers for Disease Control (2012). Brief 1: Overview of Policy Evaluation. https://www.cdc.gov/injury/pdfs/policy/Brief%201-a.pdf
- Doherty, W. J. (2000). Family science and family citizenship: Toward a model of community partnership with families. Family Relations, 49(3), 319-325.
- D.A. Skinner & E. Anderson (Eds.), Teaching family policy: A handbook of course syllabi, teaching strategies and resources (pp. 153-156). Minneapolis: National Council on Family Relations.

Commonsense Media Resources

- Commonsense Media: Benefits of Broadband Expansion to America's Economy, Education and Health (2015): https://www.commonsensemedia.org/sites/default/files/featured-content/files/benefits_of_broadband_expansion_to_americas_economy_education_and_health-cska-2015_1.pdf
- Commonsense Media: Family/Tech Company Tips for Digital well-being: https://www.commonsensemedia.org/sites/default/files/featured-content/files/cs_digitalwellbeingtips.pdf
- Commonsense Media: Advocating for Kids Well-being in a Digital Age: https://www.commonsensemedia.org/kids-action
- Commonsense Media: Digital Citizenship: https://www.commonsense.org/education/digital-citizenship

Technology Policy Applications

- The promise of schools as digital citizenship hubs. Connected Learning Alliance: https://clalliance.org/blog/the-promise-of-schools-as-digital-citizenship-hubs/fbclid=IwAR0n7so78fdIK3inGMYJzRbW1PtOubeWzoy8U1ObFd7e_QgRwnck5_2F9qM

Digital Citizenship and Digital Ethics

For additional resources on these topics, please see the items listed in Chapter 11 Additional Resources

READINGS AND RESOURCES TO COMPLEMENT THIS BOOK

Below is a NON-exhaustive list of resources for ongoing information, research, practice supports and policy action related to technology (ICT) in society and in the family

Journals that Publish at the Intersection of Technology and Family-related issues

- Computers and Education
- Computers and Human Behavior
- Contemporary Family Therapy
- Cyberpsychology, Behavior, and Social Networking
- Human Behavior and Emerging Technologies
- International Journal of Learning and Media
- Journal of Children and Media
- Journal of Computers and Human Behavior
- Journal of Family Communication
- Journal of Research in Technology in Education
- The Journal of Social Media in Society
- New Media and Society
- Social media + society
- Tuesday Morning

See also field-specific journals for special issues on technology-related topics (e.g., Family Relations, Early Childhood Research Quarterly)

Books

- Bruess, C., (Ed.) (2016) Family Communication in the Age of Digital and Social Media. Peter Lang.

- Casimiro C. and Neves B. (Eds.), Connecting Families: Information and Communication Technologies, generations, and the life course (pp. 133- 156). Bristol: Bristol University Press. doi:10.2307/j.ctv2867xm.14
- Lazarra, J. (2020) Lifespan Development https://open.maricopa.edu/devpsych/
- Lim, S. S. (2019). Transcendent parenting: Raising children in the digital age. Oxford University Press.
- Livingstone, S. and Blum-Ross, A. (2020). Parenting for a Digital Future. Oxford.
- Mascheroni, G., Ponte, C. & Jorge, A. (eds.) 2018. Digital Parenting. The Challenges for Families in the Digital Age. Göteborg: Nordicom.
- McAuliffe, M. (Ed.) (2021). Research handbook on international migration and digital technology. UK: Edward Elgar.
- Van Hook, J., McHale, S. M., & King, V. (Eds.). (2018). Families and Technology. Springer International Publishing.

Blogs/Websites

- Children and Screens: Institute of Digital Media and Child Development https://www.childrenandscreens.com/
- Commonsense Media: https://commensensemedia.org/
- Connected Learning Alliance: https://clalliance.org/
- Connected Learning Camps: https://connectedcamps.com/ [resources on learning and technology for parents and children]
    - parenting blog: https://blog.connectedcamps.com/
- Creative Commons: https://creativecommons.org/
- Decoding TV: https://www.decodingeverything.com/. Timely and very cool analysis of media, technology and popular culture by David Chen
- Digital Futures Commission: https://digitalfuturescommission.org.uk/
    - Blog: https://digitalfuturescommission.org.uk/blog/
- Edutopia: https://edutopia.org
- Emerging Tech Brew (daily email newsletter with current tech-related information, links, quizzes and more): https://www.emergingtechbrew.com/
- e-nurture network: https://www.enurture.org.uk/ . Innovative research from the UK on technology and society.
- Erikson Institute Technology in Early Childhood (TEC) center: https://teccenter.erikson.edu
- EU Kids Online: http://globalkidsonline.net/eu-kids-online/
- Federal Communications Commission: https://fcc.gov [consumer & governmental affairs] [tag: Broadband, Internet & IP]

- Federal Trade Commission: https://ftc.gov [consumer protection]
- International Society of Technology in Education: https://iste.org
- Joan Ganz Cooney Center: https://joanganzcooneycenter.org/
- KQED/Mindshift: https://www.kqed.org/mindshift/
- New York Times/Technology: https://www.nytimes.com/section/technology
- Northwestern Center for Media and Human Development. https://cmhd.northwestern.edu/
- Parenting for a Digital Future (London School of Economics; Sonia Livingstone's research): https://blogs.lse.ac.uk/parenting4digitalfuture/
- UNICEF: https://www.unicef.org/blog
- Wired magazine (tag: parenting): https://www.wired.com/tag/parenting/

Technology/Family Intersection Thought Leaders on Social Media

- Sonia Livingstone: @Livingstone_S [1]
- danah boyd: @danahboyd [2]
- Sarita Shoenbeck: @syarti
- Heather Kelly @heatherkelly
- Kevin Kelly: @Kevin2kelly
- Shira Ovide: @ShiraOvide

Policy and Statistics on Technology Related to Children and Families

- Administration on Children and Families (U.S. Dept of Health and Human Services): https://www.acf.hhs.gov/ [3]
- Center for Budget and Policy Priorities: https://www.cbpp.org/
- Childrens Defense Fund: childrensdefense.org

---

1. these are Twitter IDs. At the time of writing, Twitter was becoming out favor due to Elon Musk's takeover in October 2022. Readers are encouraged to seek out these individuals (and many others) on alternate social media sources, or their own web pages and blogs.
2. To read a tribute to danah boyd and the voices of others who speak to her role as a visionary please see https://points.datasociety.net/celebrating-data-society-founder-danah-boyd-4e40cba1701e
3. Many of these agencies do not have a specific initiative related to internet or digital access or policy, yet are interested in the topic, as evident in reports and data collection. Include words like "technology," "internet," and "digital" in search areas to locate publications and statistics.

- Child Trends: childtrends.org
- Coalition on Human Needs: chn.org
- Federal Agency Forum on Child and Family Statistics: www.childstats.gov
- Kids Count Data Center (Annie E. Casey Foundation): kidscount.org
- Rand Corporation
    - Cyber and data sciences
    - Children, families, and communities
    - The internet
- Urban Institute: urban.org

On Teaching for Critical Thinking

Angelo, T. and Cross, P. (1993). *Classroom Assessment Techniques: A Handbook for College Teachers*, 2nd Ed. San Francisco: Jossey-Bass. See also: 50 Classroom Assessment Techniques (CATS) by Angelo and Cross

Bloom, B. (1956). *Taxonomy of Educational Objectives*, Handbook 1: Cognitive Domain. NY: Longman

Brookfield, S. (2020) Teaching for critical thinking. In V. Wang (Ed.), *Handbook of research on ethical challenges in higher education leadership and administration*. IGI Global publications. DOI: 10.4018/978-1-7998-4141-8.ch012

Brookfield, S. (2017) *Becoming a critically reflective teacher* (2nd. ed.). Jossey-Bass/Wiley.

Casigrahi, B. (2017). Fundamentals of teaching critical thinking in higher education. *Journal of Education and Human Development*, *6*(3), 98–103. doi:10.15640/jehd.v6n3a11

Davies, M. (2015). A model of critical thinking in higher education. In *Higher education: Handbook of theory and research* (pp. 41–92). Springer.

Halpern, D. F. (2014). *Thought and knowledge: An introduction to critical thinking* (5th ed.). Psychology Press/Routledge.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press.

Mezirow, J. (1991). *Transformative dimensions of adult learning*. Jossey-Bass.

Ribble, M. Digital citizenship in schools (3rd ed.). International Society for Technology in Education (ISTE).

Schaber, P. and Shandling, J. (2012). Online course design for teaching critical thinking. *Journal of Allied Health*, 41, 1 (Spring).

Schlueter, J. (2016, Jun 7). Higher Ed's Biggest Gamble: Can Colleges Truly Teach Critical Thinking Skills? Inside Higher Ed. https://www.insidehighered.com/views/2016/06/07/can-colleges-truly-teach-critical-thinking-skills-essay

Van Gelder, T. (2005). Teaching critical thinking: Some lessons from cognitive science. *College teaching*, *53*(1), 41-48.

Wolcott, S. K. (2000). Designing assignments and classroom discussions to foster critical thinking at different levels in the curriculum. In *Educational Innovation in Economics and Business V* (pp. 231-251). Springer, Dordrecht.

50 CLASSROOM ASSESSMENT TECHNIQUES (CATS) BY ANGELO AND CROSS

The following exercises for critical thinking are from Angelo, T. and Cross, P. (1993). Classroom assessment techniques: A handbook for college teachers, 2nd ed. Jossey-Bass. They can be adapted to the content presented in this book and for courses promoting critical perspectives on technology in society. Many are suitable for small group work; others can be tailored for individual thinking applications.

50 Classroom Assessment Techniques (CATS) by Angelo and Cross

For any of the following:

• These do not require grading, or even intense review.

• These can be tied to participation grade, or used as a way of taking attendance.

• Alternatively, you can ask students to not put their names on their responses. They may feel less pressure this way, which may be beneficial for sensitive or very challenging material. But they may also feel that there is less value for them. • You may choose to review only a subset of students' responses and still get a sense for trends and themes.

I. Assessing Prior Knowledge, Recall, and Understanding

The CATS in this group are recommended to assess declarative learning, the content of a particular subject.

1. Background Knowledge Probe: short, simple questionnaires prepared by instructors for use at the beginning of a course or at the start of new units or topics; can serve as a pretest

2. Focused Listing: focuses students' attention on a single important term, name, or concept from a lesson or class session and directs students to list ideas related to the "focus."

3. Misconception/Preconception Check: focus is on uncovering prior knowledge or beliefs that hinder or block new learning; can be designed to uncover incorrect or incomplete knowledge, attitudes, or values

4. Empty Outlines: in a limited amount of time students complete an empty or partially completed outline of an in-class presentation or homework assignment

5. Memory Matrix: students complete a table about course content in which row and column headings are complete but cells are empty

6. Minute Paper: perhaps the most frequently used CAT; students answer 2 questions (What was the most important thing you learned during this class? And What important question remains unanswered?)

7. Muddiest Point: considered my many as the simplest CAT; students respond to 1 question (What was the muddiest point in _____?); well suited to large, lower division courses but not to those which emphasize integration, synthesis and evaluation

II. Assessing Skill in analysis and Critical Thinking

The CATS in this group focus on analysis—the breaking down of information, questions, or problems to facilitate understanding and problem solving

8. Categorizing Grid: student completes a grid containing 2 or 3 overarching concepts and a variety of related subordinate elements associated with the larger concepts

9. Defining Features Matrix: students categorize concepts according to presence or absence of important defining features

10. Pro and Con Grid: students list pros/cons, costs/benefits, advantages/disadvantages of an issue, question or value of competing claims

11. Content, Form, and Function Outlines: in an outline form, students analyze the "what" (content), "how" (form), and "why" (function) of a particular message (e.g. poem, newspaper story, billboard, critical essay); also called "What, How, & Why"

12. Analytic Memos: students write a one- or two-page analysis of a specific problem or issue to help inform a decision maker

III. Assessing Skill in Synthesis and Creative Thinking

The CATS in this group focus on synthesis—each stimulate the student to create, and allow the faculty to assess, original intellectual products that result from a synthesis of course content and the students' intelligence, judgment, knowledge, and skills.

13. One-Sentence Summary: students answer the questions "Who does what to whom, when, where, how, and why?" (WDWWWWHW) about a given topic and then creates a single informative, grammatical, and long summary sentence

14. Word Journal: involves a 2 part response; 1st the student summarizes a short text in a single word and 2nd the student writes 1-2 paragraphs explaining the word choice

15. Approximate Analogies: students simply complete the 2nd half of an analogy—a is to b as x is to y; described as approximate because rigor of formal logic is not required

16. Concept Maps: students draw or diagram the mental connections they make between a major concept and other concepts they have learned

17. Invented Dialogues: students synthesize their knowledge of issues, personalities, and historical periods into the form of a carefully structured illustrative conversation; 2 levels of invention (select and weave quotes from primary sources or invent reasonable quotes that fit characters and context)

18. Annotated Portfolios: students assemble a very limited number of examples of creative work and supplement with own commentary on significance of examples

IV. Assessing Skill in Problem Solving

The CATS in this group focus on problem solving skills of various kinds—recognition of types of problems, determining principles and techniques to solve, perceiving similarities of problem features and ability to reflect and then alter solution strategies.

19. Problem Recognition Tasks: students recognize and identify particular problem types

20. What's the Principle?: students identify principle or principles to solve problems of various types

21. Documented Problem Solutions: students track in a written format the steps they take to solve problems as if for a "show & tell"

22. Audio- and Videotaped Protocols: students work through a problem solving process and it is captured to allow instructors to assess metacognition (learner's awareness of and control of thinking)

V. Assessing Skill in Application and Performance

The CATS in this group focus on students' abilities to apply important—sometimes referenced as conditional knowledge—knowing when and where to apply what know and can do.

23. Directed Paraphrasing: students paraphrase part of a lesson for a specific audience demonstrating ability to translate highly specialized information into language the clients or customers can understand

24. Application Cards: students generate examples of real-work applications for important principles, generalizations, theories or procedures

25. Student-Generated Test Questions: students generate test questions and model answers for critical areas of learning

26. Human Tableau or Class Modeling: Students transform and apply their learning into doing by physically modeling a process or representing an image.

27. Paper or Project Prospectus: Students create a brief plan for a paper or project-based on your guiding questions.

VI. Assessing Students' Awareness of Their Attitudes and Values

The CATS in this group are designed to assist teachers in developing students' attitudes, opinions, values, and self awareness within the course curriculum.

28. Classroom Opinion Polls: Students indicate degree of agreement or disagreement with a statement or prompt.

29. Double-entry Journals: Students record and respond to significant passages of text

30. Profiles of Admiral Individuals: Students write a brief description of the characteristics of a person they admire in a field related to the course

31. Everyday Ethical Dilemma: Students respond to a case study that poses a discipline-related ethical dilemma

32. Course-related Self-Confidence Surveys: Students complete an anonymous survey indicating their level of confidence in mastering the course material

VII. Assessing Students' Self-Awareness as Learners

The CATS in this group are recommended to help students express personal goals and clarify self-concept in order to make a connection between the articulated goals and those of the course.

33. Focused Autobiographical Sketches: Students write a brief description of a successful learning experience they had relevant to the course material.

34. Interest/Knowledge/Skills Checklists: Students complete a checklist survey to indicate their knowledge, skills and interest in various course topics.

35. Goal Ranking and Matching: Students list and prioritize 3 to 5 goals they have for their own learning in the course

36. Self-Assessment Ways of Learning: Students compare themselves with several different "learning styles" profiles to find the most likely match.

VIII. Assessing Course-Related Learning and Study Skills, Strategies, and Behaviors

The CATS in this group focus both student and teacher attention on the behaviors the student actually engages in when trying to learn.

37. Productive Study-Time Logs: Students complete a study log to record the quantity and quality of time spent studying for a specific course.

38. Punctuated Lectures: Students briefly reflect then create a written record of their listening level of a lecture. Repeat twice in the same lecture and 2- 3 times over 2 to 3 weeks.

39. Process Analysis: Students outline the process they take in completing a specified assignment.

40. Diagnostic Learning Logs: Students write to learn by identifying, diagnosing, and prescribing solutions to their own learning problems.

IX. Assessing Learner Reactions to Teachers and Teaching

The CATS in this group are designed to provide context-specific feedback that can improve teaching within a particular course.

41. Chain Notes: On an index card that is distributed in advance, each student responds to an open-ended prompt about his or her mental activity that is answered in less than a minute.

42. Electronic Survey Feedback: Students respond to a question or short series of questions about the effectiveness of the course.

43. Teacher-designed Feedback Forms: Students respond to specific questions through a focused feedback form about the effectiveness of a particular class session.

44. Group Instructional Feedback Technique: Students respond to three questions related to the student's learning in the course.

45. Classroom Assessment Quality Circles: A group or groups of students provide the instructor with ongoing assessment of the course through structured interactions.

X. Assessing Learner Reactions to Class Activities, Assignments, and Materials

The CATS in this group are designed to give teachers information that will help them improve their course materials and assignments.

46. RSQC2 (Recall, Summarize, Question, Connect and Comment): Students write brief statements that recall, summarize, question, connect and comment on meaningful points from previous class.

47. Group-Work Evaluation: Students complete a brief survey about how their group is functioning and make suggestions for improving the group process.

48. Reading Rating Sheets: Students complete a form that rates the effectiveness of the assigned readings.

49. Assignment Assessments: Students respond to 2 or 3 open-ended questions about the value of an assignment to their learning.

50. Exam Evaluations: Students provide feedback about an exam's learning value and/or format