

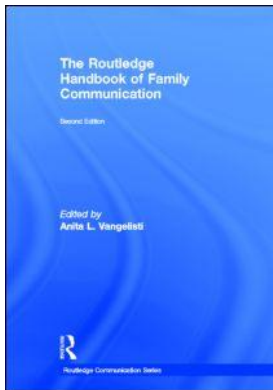
This article was downloaded by: 10.2.97.136

On: 22 Sep 2023

Access details: *subscription number*

Publisher: *Routledge*

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: 5 Howick Place, London SW1P 1WG, UK



The Routledge Handbook of Family Communication

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Digital Technology and Families

Publication details

<https://test.routledgehandbooks.com/doi/10.4324/9780203848166.ch27>

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Published online on: 01 Nov 2012

How to cite :- Nancy A. Jennings, Ellen A. Wartella. 01 Nov 2012, *Digital Technology and Families* from: The Routledge Handbook of Family Communication Routledge

Accessed on: 22 Sep 2023

<https://test.routledgehandbooks.com/doi/10.4324/9780203848166.ch27>

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Digital Technology and Families

Nancy A. Jennings and Ellen A. Wartella

Over the years, many of the triumphs and struggles of families have remained the same. Generation after generation, babies are still attached to their mothers, and teens still yearn for their independence. While some things remain the same, changes in society place new constraints on the family process. Within the past three decades, we have seen an incredibly rapid growth in digital technologies in forms of mechanical advances in computers and cell phones and in the development of mechanisms for communication through social networking and entertainment through smartphone Apps. Although we are learning more about what role these digital technologies have in the lives of children and adults, we also must learn how these technologies are affecting family relationships and family life.

This chapter will discuss the research on digital media technology on families. We will explore family systems through the life course and encounter how different technologies impact family life at different stages from infancy to adolescence. We will find general conclusions regarding the impact of digital technologies on family life and provide suggestions for further research in the field of media and family studies.

Technology in the Home

Media continue to saturate family households. For young children between the ages of eight months and eight years, 2.97 televisions, 1.61 computers, 1.99 videogames and 3.89 DVD/video players reside in the average American home (Lapierre, Piotrowski, & Linebarger, 2010). Homes for older children between the ages of eight and 18 years contain on average 3.8 TVs, 2.8 DVD or VCR players, one digital video recorder, 2.2 CD players, 2.5 radios, two computers, and 2.3 console videogame players (Rideout et al., 2010). Over the past ten years, there has been a steady increase in accessibility of media platforms for young people between the ages of eight and 18 years. The explosion in mobile media contributes dramatically to this phenomenon. In the past five years, the percentage of eight- to 18-year-olds who own a laptop has grown from 12 percent to 26 percent; cell phone ownership has leaped from 39 percent to 66 percent, and iPod or MP3 player ownership has soared from 18 percent to 76 percent (Rideout et al., 2010). Along with media ownership, access to the Internet has reached new heights. For families with children between the ages of eight months and eight years, 84.1 percent of parents indicate they have home Internet access, and 74.8 percent claim that they have high-speed Internet

access (Lapierre et al., 2010). Similarly with older children between the ages of eight and 18 years, 84 percent of families have Internet access and 59 percent indicate they have high-speed or wireless access to the Internet (Rideout et al., 2010).

While digital technologies have blanketed family life from infancy, the use of these technologies seems to change during the life course of growing children. For preschoolers between the ages of two and five years, television viewing has reached an eight-year high, climbing to more than 3.5 hours (213 minutes) on an average day (Gutnick, Robb, Takeuchi, & Kotler, 2011). However, as children grow, their media habits change. Between the ages of seven and nine years, children expand their media habits from primarily television viewing into use of digital technologies such as the Internet and videogames (Gutnick et al., 2011). Internet use changes with 30 percent of three- to five-year-olds accessing the Internet on a typical day, whereas 50 percent of six- to nine-year-olds go online on a typical day (Gutnick et al., 2011). Similar changes are noted with videogame use. Less than half of six-year-olds play videogames on an average day compared to over 70 percent of eight-year-olds (Gutnick et al., 2011). As children's dexterity with small gadgets increases with their developing fine-motor skills, their increased ability to focus on activities for longer periods, to think logically, and to read opens new opportunities for engagement with digital technologies. Similarly, teen use of mobile devices provides a second shift in the media habits of contemporary youth. As children mature from eight- to ten-year-olds to 15- to 18-year-olds, ownership of hand-held videogame players decreases while ownership of cell phones, laptops, and iPod/MP3 players increases (Rideout et al., 2010).

Taken in a larger societal context, these changes in media preferences may also be the result of rapid changes in technological forms and uses. Since 1990, advances in digital technologies have been dramatic and abundant. Four significant events occurred in the early 1990s which have had an unforeseen impact on computer and Internet use. First, in May 1990, Microsoft Window 3.0 was first released. This version of Windows laid the foundation for the look and feel of future generations of this operating system complete with color graphics and icons (Windows, 2011), making it competitive with the graphical interface offered by Apple with the Mac. Second, Intel released the Pentium processor (Intel Museum, n.d.) in 1993, shattering previous records on processing speed and setting a new standard for processing capabilities. Third, the National Science Foundation lifted all restrictions to commercial content on the Internet (Common Standards, n.d.). Finally, Mosaic, a graphical web browser, was released to the public in 1993 (About NCSA Mosaic, 2011). This was a significant step forward for widespread Internet use by offering an attractive interface with icons and pictures, "software easy to use and appealing to 'non-geeks'" (About NCSA Mosaic, 2011). These events profoundly changed the nature of the digital experience, particularly for children born during this time and beyond. With these changes to the digital environment, children grew up with lightning fast computer processors, icons and graphics to help lead them to content even before they could read, and a seamless merger between commercial and noncommercial content online. Prensky (2001) refers to the rapid growth in digital technology as a "'singularity'—an event which changes things so fundamentally that there is absolutely no going back" (p. 1). As such, children enter this world as digital natives (Prensky, 2001), fluent in the "language of computers, video games, and the Internet" (p. 1), living among digital immigrants who "always retain, to some degree, their 'accent,' that is, their foot in the past" (p. 3). Within the family context, digital natives and immigrants live together, forging new ground as they adopt and adapt new technologies in the home.

Therefore, we must consider the implications of these changes on family structures within the larger societal environment that includes these rapid technological advancements.

Life Course Paradigm

A small amount of attention has been given to theory development of families' use of technology in the home. Jordan (2003) suggests that a family structures framework provides a mechanism by which to assess how media use (and in this case uses of technology) "fit" with the norms, values, and beliefs that define the family system." (p. 143). As such, scholars have used this paradigm to distinguish the impact of digital technologies on structural components of the family system such as family boundaries and family cohesion. The family structures literature provides a framework to pull apart the subsystems and dynamics of the family process (Jennings & Wartella, 2004). However, given the vast and rapid changes in digital technologies within the past three decades, this framework is limited in its applicability to the contextual changes in society. Therefore, theoretical approaches that incorporate changes in time and historical context provide a better frame for exploring the rapid changes in technology use within family structures.

Two theoretical approaches to the study of family include family development theory and life course theory. Watt and White (1999) utilize family development theory to focus on the role of technology on different family stages and the sequencing and timing of transitions between stages. As such, they suggest that technological innovations influence family roles and specializations which then have influence on subsequent family stages and transitions. In their discussion of seven stages of family development (mate selection, early marriages, preschool children, elementary school children, adolescents, post-parenting, and retirement families), technological innovations influence the ways in which family members communicate, work, and recreate.

Not only are families progressing and changing, but the technologies available for use are changing as well. Therefore, as a complement to the family structures framework and family development theory, the life course paradigm embeds these structures and stages within social institutions and historical context. As such, the life course paradigm emphasizes the social pathways of human development in and across historical time incorporating macro level structures and social institutions with micro level individual experiences (Elder, 2003). Five principles guide the life course paradigm. First, the principle of life-span development posits that human development and aging are a lifelong process (Elder, 2003). This principle was first articulated by Elder in 2003 but was inherent in his previous explanations of the life course paradigm. As such, Elder contends that human development does not stop at the age of 18 years, and that adults can and do experience fundamental change and growth. This coincides with the seven stages of family development which begins at an adult level when a family is first formed through mate selection (Watt & White, 1999). Second, the principle of agency states that "individuals construct their own life course through the choices and actions they take within the opportunities and constraints of history and social circumstance" (Elder, 2003, p. 11). This favors a constructionist position in the process of development and makes individuals active participants in their own life pathways. Third, the principle of time and place involves the contextualization of life course within historical times and places (Elder, 2003). Individual life courses reflect different historical effects, often in the form of cohort effects. Elder (1994) cites the growth of mass media as one of the most influential historical changes for American children in the 20th century. Similarly, the

continuous and quick growth of digital technologies has made a substantial impact on the lives of children growing up as digital natives. Fourth, the principle of timing gives merit to the impact of life transitions, events, and behavioral patterns on their timing in a person's life (Elder, 2003). The personal impact of any change will be dependent upon when this change occurred in someone's life. Finally, the fifth principle of linked lives contends that "lives are lived interdependently and socio-historical influences are expressed through this network of shared relationships" (Elder, 2003, p. 13). These shared relationships include those expressed in the family as well as those outside of the family structure including friends and coworkers. This last principle is the cornerstone of one of the most influential changes in digital technologies, online social networking.

Family Structures Within Socio-historical Changes

Technological changes have a profound effect on the family. Yet, as Watt and White (1999) suggest, the influence of these changes varies depending on the family stage that is experienced at the time of the change. For example, while Mesch (2006) contends that Internet use in families with adolescents tends to blur family boundaries, he points to other research (Hughes & Hans, 2001) that suggests Internet use for empty-nest families is associated with high family cohesion with the Internet functioning as a tool of communication between parents and grown children living at a distance. Moreover, uses of technology change as children develop, and as a result, parental concerns and rules regarding media use change (Jennings & Wartella, 2004). Therefore, this next section examines the impact of technological change on family relationships at different stages of family development.

Parents, Media, and Babies

Baby media have exploded in the past decade, and children younger than two are showing increased use of these baby media. In 1997, the first Baby Einstein video, called *Baby Einstein*, was released. This video and its successors gave rise to an explosion of screen media targeted at infants, including television shows like *Teletubbies* and *Classical Baby*, an array of video/DVD products (*Brainy Baby*, *Baby Mozart*), the cable channel BabyFirstTV, and computer software for laptops as well as portable devices like cell phones. As noted in some of the earliest research into young children's attention to and imitation of screen models, children younger than two likely do not attend to (and by implication learn from) screen models when the material is inappropriate or of low interest (McCall et al., 1977). While the videos were initially marketed as a line of instructional videos to teach babies about the humanities (including music and art), the Baby Einstein Comp clarified this intention, indicating the videos are designed to promote parent-child interaction by providing a "digital board book" allowing a parent to have two free hands while enjoying and experiencing the video with their little one—leaving their hands free to clap, point to objects and interact with their baby. Across all of these infant media outlets, the program content is intended (either implicitly or explicitly) to provide children with educational or informational programming in an entertaining presentational style that elicits the children's attention and demonstrates to the parents that their infants are learning. For instance, the Baby Einstein series of DVDs focuses on educational themes such as language, numbers, shapes, colors, seasons, art, classical music, and nature. And over the past several years,

academic researchers have begun to study various aspects of infants' media exposure, including whether infants learn from such screen media, how screen media changes parent-child interactions, and the potential effects of media exposure on cognitive development.

There is evidence from two major national studies conducted in the past eight years by the Kaiser Family Foundation suggesting that screen media are enormously popular with young children. Children from birth to two years of age watch about an hour and 15 minutes a day of television and video/DVDs (Kaiser Family Foundation, 2003, 2006; Vandewater et al., 2007), and much of what children watch is produced specifically for them (Garrison & Christakis, 2005; Vandewater, Bickham, & Lee, 2006; Vandewater et al., 2007). There are various estimates of the proliferation of baby videos. According to the *New York Times*, in 2003, 32 percent of all new babies born in the U.S.A. had watched the *Baby Einstein* video (Lewin, 2003).

There have been very few studies of parental attitudes about infant media. The Kaiser Family Foundation (2003, 2006) has found that parents generally believed in the positive role infant media could play in their children's development. In the 2003 Kaiser Family Foundation report, parents of children from birth to six years of age were asked their opinions about the potential of television in learning. Forty-two percent of parents believed that television mostly helped children's learning, compared to 27 percent who felt it mostly hurt learning and 21 percent who felt it did not affect learning either way. The same study found that 58 percent of parents believed that educational television was very important for children's intellectual development, with 49 percent feeling the same about educational videos and DVDs. It should be noted that this survey did not ask specifically about infant DVDs and included older children.

In a nationally representative survey of 1,051 parents of children aged between six months and six years, 42 percent of parents believed that television was "a lot" or "somewhat" helpful in teaching young children to get along with others (Kaiser Family Foundation, 2006). Another 52 percent of parents felt that television was "a lot" or "somewhat" important in helping their children to be ready to learn in school. When asked specifically about baby videos, 48 percent of parents believed that baby videos had a positive effect on early childhood development. Of these parents, 41 percent based their impressions on their own experiences. Vandewater et al. (2005) reanalyzed the Kaiser Family Foundation's (2003) data to examine parental attitudes toward screen media by parents in heavy television use households. For children under the age of two, parents in constant television households (where television is on "always" or "most of the time," even if no one is watching) were twice as likely as other parents to view educational television as a very important contributor to healthy development (Vandewater et al., 2005). These data suggest that some parents may feel that baby videos are an acceptable way to occupy their children, because they are presumed safe and potentially educational.

The rise of baby media over the past decade has been the result of multiple factors, not the least of which is more positive parental views of the educational potential of educational media for preschool children. Academic research on the impact of such media is just starting to accumulate, and the popularization of such research is relatively meager. What research exists suggests that baby videos as currently constructed are less efficient mechanisms for teaching babies words, for instance, than is adult child interaction (Wartella, Richert, & Robb, 2010). However, the trends suggest that baby media will be a part of American children's lives for the time to come.

Preschoolers and Their Families

As toddlers mature into preschoolers, digital technologies become more widely used. Preschoolers increasingly use computers, Internet, and videogames, but much less often than television (Gutnick et al., 2011). Moreover, access and use of digital media are not equally distributed and changes with age. For example, at age three, only about a quarter of children go online daily, but by age five, nearly half go online daily (Kotler, 2010 as reported in Gutnick et al., 2011). Similar results are seen with handheld videogames. According to the NPD Group (2010), only about 20 percent of four- and five-year-olds use handheld videogames while almost half (46 percent) of seven-year-olds use them (as cited in Gutnick et al., 2011). While preschoolers don't personally own smartphones, many young children are using them. Known as the pass-back effect, parents or other adults are allowing their child to use their mobile device, usually for short sessions, with the understanding that the child will pass back the device to the parent or adult (Chiong & Shuler, 2010). This phenomenon was first noted in 2009 and in a recent study of four- to seven-year-olds, nearly two-thirds of the children reported that they have used an iPhone (Chiong & Shuler, 2010).

The limited research on families with preschoolers and new technologies provides meaningful insight concerning digital media within the family structure. From observations of family interactions, Plowman, McPake, and Stephen (2010) conclude that preschool children were "discriminating users of technology" (p. 68), expressing individual preferences and different dispositions that guided the integration of technology in their family lives, thus giving the preschooler a great deal of agency. Even though some children lived in homes with a high degree of accessibility to technology, children were not necessarily drawn to those resources, despite the invitations extended by their parents (Plowman et al., 2010). Indeed, preschoolers in all households that they observed engaged in a range of nontechnological activities, although at times, the technology seemed to blend with the child's play. Plowman and her colleagues offer an example of a preschool boy who liked to download and print pictures of characters from a website, attach them to cardboard and play with the cut-out images with their other toys. These experiences, however, must be placed within the values of the parents concerning new technologies. Some parents were very enthusiastic and encouraged their preschooler's engagement with digital media. In these families, parents spoke of their child's developing technological skills with pride. In other households, parents valued traditional activities such as dressing up and outdoor play more than technological play. As such, these parents encouraged traditional activities, expressing that they would rather wait until their child was older to engage with technologies (Plowman et al., 2010). Moreover, parents were the most commonly mentioned source of support for learning digital technologies by preschoolers (Stephen, McPake, Plowman, & Berch-Heyman, 2008). As preschoolers seek advice, they find a way to enter into family interactions and shared family practices.

Siblings of preschoolers also seem to play a role in the socialization of digital technology for young children. Through discussions with three-, four-, and five-year-olds, Stephen and her colleagues (2008) discovered that preschoolers perceive that they share digital media with their older siblings. For example, one preschool girl indicated that her brother showed her how to use a game on the computer, and a boy preschooler reported that he was able to share his sister's videogame system (Playstation) with her. Moreover, Stephen and her colleagues suggest that children perceive of digital technology as "resources to be grown into and out of like toys or clothes" (p. 109). Indeed younger children seem to reject pretend mobile phones for phones that look more realistic, or even for their

parent's phone. However, this should not be surprising given the number of Applications available on smartphones for preschoolers. In June, 2009, almost half (47 percent) of the top 100 top-selling paid Apps in the education section of the iTunes App store were targeted towards preschoolers or elementary-aged children, and 60 percent of the top 25 targeted toddlers/preschoolers (Shuler, 2009). As such, then, digital technologies are no longer just meant for adults, giving validation to the preschooler's viewpoint while still raising concerns over their use with these young digital natives.

Middle Childhood, Technology, and Families

For children in middle childhood, videogame play is particularly important. Over half of eight- to ten-year-olds (59 percent) and 11- to 14-year-olds (57 percent) use videogames on any given day compared to only a little over a third (39 percent) of 15- to 18-year-olds (Roberts, Foehr, & Rideout, 2005). As expected, then, far more eight- to ten-year-olds (66 percent) and 11- to 14-year-olds (60 percent) own a handheld videogame player than 15- to 18-year-olds (41 percent), and these children in middle childhood are also far more likely to have a videogame console in their bedroom than older adolescents (Roberts et al., 2005). Moreover, there has been a significant increase in videogame play since 2004, particularly for handheld video gaming. Recent data suggest that console videogame play peaks for 11- to 14-year-olds at a daily average of 43 minutes while younger children spend more time with handheld games than older adolescents (Rideout et al., 2010).

While video gaming plays an important role for children in middle childhood, computer and Internet use occupies less time during middle childhood. Even though children's overall recreational computer time increased from 1999 to 2004, eight- to ten-year-olds spent the least amount of average daily time using a computer (37 minutes) compared to 11- to 14-year-olds who spent on average about an hour (1 hour 2 minutes) on a computer daily and 15- to 18-year-olds who spent nearly an hour and a half (1 hour 22 minutes) daily in 2004 (Roberts et al., 2005). More recent data suggest that trend continues. In 2009, eight- to ten-year-olds spent more time on computers daily (46 minutes) than in 2004, but children in this age group were still using computers far less than older children (1 hour 46 minutes) and adolescents (1 hour 39 minutes) (Rideout et al., 2010).

Families with children in middle childhood seem to cope with these changing interests in digital technologies with various mediation strategies. Interestingly, Nikken and Jansz (2006) conclude that parents employ similar mediation strategies to videogames as they do to television viewing: (a) restrictive mediation (limiting videogame play or the type of videogame played), (b) active mediation (expressed approval or disapproval of videogames and discussing videogame play within the family), and (c) co-playing (playing videogames together). Mothers applied more restrictive and active mediation strategies for videogame play than fathers, but interestingly, co-playing was done equally among mothers and fathers (Nikken & Jansz, 2006). This is quite unlike early research on videogames which indicated that fathers are more likely to play videogames and work with the computer with their children than mothers (Bird, Goss, & Bird, 1990; Mitchell, 1985; Tinnell, 1985). This may be related to the increase in game play among women as a reflection of societal changes as well. Today, 40 percent of videogame players are women, and 48 percent of parents indicate they play videogames with their child at least weekly (Entertainment Software Association, 2010). Parents indicate the primary reasons they co-play videogames are (a) because it's fun for the entire family; (b) because the parent is asked to play; (c) parents use videogame co-play as a way to socialize with their children; and (d) parents

can monitor game content when they co-play (Entertainment Software Association, 2010). Research suggests that parents who play videogames tend to be more positive about the effects of videogames and apply all forms of mediation strategies more often than nonvideogame players (Nikken, Jansz, & Schouwstra, 2007).

Restrictive mediation strategies have been of primary focus in the research literature. Interestingly, age differences seem to appear particularly for the youngest of children in middle childhood, coinciding with their increased videogame use. In the U.S.A., eight- to 14-year-olds report that their parents have more rules regulating time spent with videogames than 15- to 18-year-olds. This trend continues and becomes more apparent with the increased videogame usage reported by children in this age group in 2009. Almost half (45 percent) of eight- to ten-year-olds reported that their parents had rules about how much time they could spend with videogames. Similarly, almost a third (31 percent) of children between the ages of 11 and 14 years reported parental rules on time spent with videogames compared to only 18 percent of 15- to 18-year-olds (see Table 27.1). Parents of younger children in middle childhood are also more likely to have rules about what type of videogames the child can play, both in 2004, and 2009 (see Table 27.1). Similar results have been found abroad as well, indicating that parents of younger children in middle childhood and children who were more enthusiastic about videogame play were more likely to utilize restrictive mediation strategies than for older children or those less excited about videogames (Nikken & Jansz, 2006).

While videogame play was the primary digital media use for children in early middle childhood, computer use soars for children as they age into the pre-teen and teenage years. Children who are eight- to ten-years-old spend the least amount of time with computers, averaging 46 minutes per day. By contrast, 11- to 14-year-olds spend an hour more on average (1 hour 46 minutes) per day and 15- to 18-year-olds spend 1 hour 39 minutes per day with computers (Rideout et al., 2010). Similar trends were observed in 2005, such that the youngest members of the group (eight- to ten-year-olds) were using computers the least (only 37 minutes per day on average). However, daily computer use increased for each age group peaking at almost an hour and a half (1 hour 22 minutes) for 15- to 18-year-olds (Roberts et al., 2005).

Interestingly, parental rules about computer use have increased dramatically between 2004 and 2009. In 2004, children expressed that their parents had rules about how long they could be on the computer (28 percent), what they could do on the computer (32 percent), and that their parents usually knew which websites they were visiting (30 percent) (Roberts et al., 2005). By 2009, the rules had changed. Over half of the children (52 percent)

Table 27.1 Parental Rules about Video Games

	<i>Rules about which video games child can play</i>		<i>Rules about how long child can play video games</i>	
	2004 ^a	2009 ^b	2004 ^a	2009 ^b
8- to 10-year-olds	32%	54%	34%	45%
11- to 14-year-olds	25%	33%	27%	31%
15- to 18-year-olds	5%	12%	11%	18%

Source:

^a (Roberts et al., 2005)

^b (Rideout et al., 2010)

indicated their parents had rules regarding what they are allowed to do on the computer, and a little over a third (36 percent) had rules about how long they could be on the computer (Rideout et al., 2010). Moreover, age plays a key role in the presence of computer rules. By the time a child leaves middle childhood, fewer children indicate their parents have computer rules. In 2004, significantly more eight- to ten-year-olds (44 percent) and 11- to 14-year-olds (34 percent) indicated they had rules on what they were allowed to do on the computer than 15- to 18-year-olds (18 percent) (Roberts et al., 2005). This continued in 2009, although at a much higher rate. Significantly more eight- to ten-year-olds (64 percent) and 11- to 14-year-olds (60 percent) had rules governing what they did on the computer compared to only 36 percent of 15- to 18-year-olds (Rideout et al., 2010).

These rules are particularly critical in terms of children's use of digital technologies, particularly for Internet use. Among fourth-, fifth-, and sixth-grade Korean children, Lee and Chae (2007) discovered a relationship between the child's perception of parental mediation of the Internet and the types of activities done online. Children who reported that their parents recommend good websites to them were more likely to use the Internet for educational purposes. Similarly, children who reported that they used the Internet together with their parents (co-using) were also more likely to use the Internet for educational purposes. Co-using was also related to Internet use for communication such that the more co-using, the more the children were involved with online communication (Lee & Chae, 2007). Interesting, restrictive mediation, that is limiting which websites the child can visit, was not related to any type of children's online activities. However, Internet supervision at home did have an impact on children's practice of unsafe behaviors (Valcke, Schellens, Van Keer, & Gerarts, 2007). Specifically, children who reported having at least some level of control of their Internet use by parents at home were less likely to pass personal information and pictures to unknown chat contacts than those without parental supervision. This has implications for the restrictive mediation strategy so readily employed in the U.S.A. The restrictive mediation strategy may not be effective in the types of activities children choose online, but it does seem to have an impact on some safe online behaviors for children in this age group.

Children's online activities also seem to be related to their time spent together as a family and on their family communication. The amount of time children spent online was positively related to perceived declines in family time but was not related to perceived decline in family communication (Lee & Chae, 2007). As such, Lee and Chae suggest that Internet use may displace passive family time rather than active family time, such as family communication. However, the types of online activities were important factors in children's perceptions of family time and family communication. The frequency of online gaming was a significant factor in both perceived decline in family time and perceived decline in family communication (Lee & Chae, 2007). Educational online activities were not related to perceived declines in family time or in family communication. Lee and Chae conclude that while online gaming may be detrimental to family time and family communication, educational online activities do not threaten family relationships. However, online communication activities were marginally related to perceived declines in family communication, but no relationship with perceived family time (Lee & Chae, 2007). This may be a result of children's interest in using digital technologies to keep in touch with their friends more so than with their family. Qualitative interviews with Norwegian children between the ages of ten and 12 years suggest that communication technologies, particularly mobile phones, weaken family ties while strengthening peer bonds (Kaare, Brandtzæg, Heim, & Endestad, 2007). Within the child's lifespan, however, peers

become increasingly important. Therefore, it would seem a natural transition for children on the verge of adolescence to shift their communication habits.

Adolescence, Teenagers, and Their Families

As children get older, families experience a complex dance of balancing the child's growing independence with the parent's need to protect and support the child. Digital technologies such as cell phones and laptops offer tools that fulfill both the needs of the child and the parent although the struggle to maintain a balance remains within the family structure. Research on the impact of new technologies on parent–teen relationships is mixed. Richards and her colleagues (2010) found that for 14- and 15-year-olds, more time spent playing on the computer (not for homework) was associated with poor attachment to parents. Mesch (2003) also found that the type of Internet use was related to teen's relationships with their parents. He found that for Israeli adolescents using the Internet for educational purposes was positively related to perceived closeness of adolescents to their parents. However, Durkin and Barber (2002) discovered that teens who played computer games reported greater family cohesion than teens who did not play computer games. Interestingly, each of these studies involved data collection at different time periods, although with teens of similar age. Of these three studies, Durkin and Barber's teens were collected in 1988, Mesch in 2000, and Richards and her colleagues in 2004. Therefore, changes in computer and Internet use over this time frame may account for the differences observed.

Parenting rules and attitudes about computer and Internet use have also changed with time. While fewer parents of 15- to 18-year-olds have rules about what their child can do on the computer than parents of children between the ages of eight to 14 years, twice as many parents of older teens had these rules in 2009 than in 2004. Indeed, rules about what a child is permitted to do on the computer increased dramatically for children of all ages within those five years (see Table 27.2). Interestingly, even though the majority of parents of online teens believe the Internet is beneficial for their teens, significantly fewer parents of online teens reported that the Internet was a good thing for their teen in 2006 (59 percent) than in 2004 (67 percent) (Macgill, 2007). Parents who were more highly educated and parents who had more wireless devices such as PDAs or laptops are more likely to think the Internet is a good thing for teens than less educated parents and parents without wireless technology (Macgill, 2007). This may be a reflection of historical changes in the types of technologies available. Between 2004 and 2009, social networking sites such as MySpace and Facebook came of age. Indeed, Lenhart (2007a) refers to 2005–6 as “the year of myspace” noting that more than 100 million accounts had been

Table 27.2 Parental Rules about Computer Use

	<i>Rules about what child can do on the computer</i>	
	2004 ^a	2009 ^b
8- to 10-year-olds	44%	64%
11- to 14-year-olds	34%	60%
15- to 18-year-olds	18%	36%

Source:

^a (Roberts et al., 2005)

^b (Rideout et al., 2010)

created on MySpace and that it was the third most popular website in the U.S.A. Facebook, another social networking site, was growing quickly and surpassed MySpace, becoming the most popular social networking site in January 2009 (Thornton, 2009). Accompanying this growth in social networking sites were reports of a new form of bullying carried out online referred to as cyber-bullying. Between 1999 and 2005, teens reporting online harassment increased by 50 percent (Wolak, Mitchell, & Finkelhor, 2006). In 2006, almost a third (32 percent) of online teens indicate they have been a victim of a range of cyber-bullying activities including reposting or forwarding a private email, spreading rumors online, receiving threatening emails or IMs, or having an embarrassing picture posted (Lenhart, 2007b).

Parents employ different types of mediation strategies with various outcomes. Eastin (2006) and his colleagues found associations between parenting style and Internet mediation techniques employed in homes with teenagers. Specifically, authoritative parents (those parents characterized by high levels of demand accompanied by warmth) use evaluative and restrictive mediation strategies much more frequently than authoritarian (high demand but low warmth) or neglectful (low demand and low warmth) parents. Moreover, authoritative parents use technological blocking as a restrictive mediation tool more frequently than parents using other parenting styles. Interestingly, Mesch (2009) reports a relationship between parental mediation strategies and online victimization of teens. Of the different mediation techniques examined, Mesch (2009) reports that evaluative techniques seem to decrease the risk of exposure to online bullying. Specifically, teens of parents who have rules on which websites their teens were allowed to visit were statistically less likely to be a victim of online cyber-bullying than teens without these rules. Computer location, restrictions on the amount of time teens spent online, and rules about information sharing online did not influence the risk of cyber-bullying for teens. Mesch (2009) concludes that parents who discuss online safety with their teens create awareness of the potential dangers online.

Not only are teens using computers and the Internet, but they are increasingly using mobile phones as well. In 2009, 75 percent of teens between the ages of 12 and 17 years owned a cell phone, compared to 45 percent in 2004 (Lenhart, Ling, Campbell, & Purcell, 2010). Moreover, teens who use landline phones has decreased from 39 percent in 2006 to 30 percent in 2009 while teens who use text messaging has increased from 27 percent to 54 percent over the same time period (Lenhart et al., 2010). Compared to adults, teens are far more likely to text than adults, but teens and adults are similar in their use of cell phones for voice calling (Lenhart, 2010). Teens will use the asynchronous communication of texting to broach difficult subjects with their parents (Devitt & Roker, 2009). For example, one 15-year-old girl said, "Well, I think mobiles can be really good if you've got something you don't wanna tell straight away, like texting my mum that I was getting bullied. You might not wanna say that to her straight out, like" (Devitt & Roker, 2009, p. 192).

Interestingly, when teens use voice calling on their cell phones, they are most likely calling their parents (Lenhart et al., 2010). The direction of the call has particular implications for parent-teen relationships. Teens who receive calls from their parents are often annoyed with their surveillance (Ribak, 2009). One 17-year-old reports, "A call from my parents is annoying if it has no purpose. It's not the time, it's just annoying—control conversations are very annoying: 'Where are you?' 'When will you be back?' these conversations are very annoying as a means for control" (Ribak, 2009, p. 190). This ethnographic research is supported in recent survey research of teens. Adolescents reported greater parent conflict when parents called their cell phones for monitoring,

tracking schoolwork, or when upset, than when the teen initiated the call. However, adolescents who initiate cell phone calls with their parents were more likely to report better relationships with their parents than those who did not call their parents (Weisskirch, 2010).

These effects may be a result of the sense of independence that cell phones provide for teens. Ribak (2009) suggests that cell phones operate as a transitional object, allowing for intergenerational distance while maintaining intimacy when needed. Parents can feel reassured of the safety and well-being of their teen when they hear their voice, while teens express appreciation of the independence that this “lifeline” can provide (Devitt & Roker, 2009). Cell phone ownership is a “symbolic step away from the home” (Ling, 2000, p. 110) for teens while providing a sense that their parents are “absent-thought-ever-present” (Ribak, 2009, p. 191). In the words of a 17-year-old girl, “The mobile reinforces the sense of independence because you can allow yourself to be where you want and everything, and you know that at worst, you have your mobile with you ... you can simply call your parents. It sort of guards you ... it’s like you’re never alone.” (Ribak, 2009, p. 191).

Conclusion and Discussion

Digital technologies play different roles for families at different stages in the life course. For children of all ages, television screens are important, as viewing television content makes up the lion’s share of their time spent with media. However, as children age, different forms of digital technologies become increasingly important. For families in early stages with babies, far less emphasis is placed on new digital technologies. While preschoolers do not own digital technologies such as a laptop or cell phone, they are using these devices and passing personal devices back and forth with their parents. Children in middle childhood co-play videogames with siblings and parents. Through adolescence, teenagers move away from videogame play and put more value on cell phones than videogames. To that extent, we do see a progression of the importance of different technologies as different stages for contemporary youth.

Not only does the value of different technologies change, but the associations and use of technologies within the family structure also changes through the life course of the family. Preschoolers see technologies as a way to participate in the family process and share experiences with parents and siblings. For children in middle childhood, the digital technology becomes a larger platform for families to engage in shared activities, thus building family relationships. With the passage into adolescence, digital technologies take on a new role and act as tools of independence for the teen and a means to stay connected to the distant teen at a moment’s notice. Teens also use the technology for security as they explore the world, having contact with parents when needed.

As technologies change, family practices accommodate to the new influences in family life. The use of digital technologies in the family seems to embody the established relationships within the family, making the process of family relations and family communication more visible. Teen–parent interactions are able to be tracked by text message trails and cell phone call records. The amount of time spent playing on videogame systems like the Wii is recorded by the device itself with a full report available within a few button clicks. Email trails, comments on social networking sites, shared photos online, and family members recreated in avatar and profile form on videogame systems provide documentation of lived family experiences. The technology itself highlights the

relationships within the family and tells the tale of how the digital natives and digital immigrants integrate their lives together.

While we are beginning to get a better picture of family life with digital technologies, research needs to continue and expand, particularly as technologies continue to expand and evolve. Soon, these digital natives will begin their own families. Research suggests that the more familiar people are with technology, the more they trust it. Much of the digital natives' experiences have been with digital immigrants who are trying to keep up with changes in technology and who may question the use of digital technology within their family. How will the experiences of digital natives growing up with digital immigrants influence their own parenting? What will the next generation of technological advances bring that will influence family relationships and interactions? Furthermore, there needs to be a greater attempt to apply theory to practice. Use of digital media technology in the family setting continues to be undertheorized. Very little work has been applied to families and digital technologies beyond the use of mediation strategies in the home.

There is much speculation regarding the impact of the digital technologies on family life, yet so little research to substantiate these claims. What we do know is that much like earlier media technologies, the digital technologies are being quickly adopted by families with children, but differently across the life course. We also know that the pace of technological development has not slowed and that as children embrace these technologies, families do as well. Different technologies have more importance at different stages of family development, and these technologies serve different roles either as a relationship builder for preschoolers and children in middle childhood or as a tool for emancipation for teenagers and adolescents. Truly, this line of research requires an interdisciplinary approach. Scholars from family studies, child development, and communication need to work together to create an integrated understanding of digital natives, digital immigrants and their digital lives.

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