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Late Adolescents' Perceptions of a Digital Generation Gap and Perceived Parent-Child Relations

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LATE ADOLESCENTS' PERCEPTIONS OF A DIGITAL GENERATION GAP

AND PERCEIVED PARENT-CHILD RELATIONS

by

J. Mitch Vaterlaus

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ABSTRACT

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Empirical investigations concerning generational differences between parents and adolescents were prevalent in the 1960s and 1970s. Interest in generational differences has resurfaced with the advent and evolution of technology. This study examined perceived generational differences between late adolescent and parent knowledge about interactive technologies. A sample of late adolescents ($N = 605$) reported their own interactive technology knowledge and perceptions of their parents' technology knowledge via online questionnaires. Paired t tests and Cohen's d were used to compare late adolescents' self-reported knowledge with their perceptions of their parents' knowledge. Perceived digital generation gaps were identified in the knowledge areas of video chat, cell phones, general social networking, Twitter, basic email, and advanced email. The differences remained constant when paired t tests were conducted separately by male and female late adolescents.

Patterns between perceived parent-late adolescent relationship characteristics and

perceived generational differences in technology knowledge were examined using

Cohen's *d*. Differences in perceived parent-child quality time were found among male

late adolescents when there were generational technology knowledge differences in the

areas of email, Twitter, and social networking. Parent-child conflict was most related to

perceived generational technology differences in Twitter, video chat, and general social

networking knowledge. Finally, perceived generational technology knowledge

differences in the areas of video chat, Twitter, email, and general social networking were

most related to differences in perceived parental-knowledge of late adolescents'

behaviors.

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The primary objective of this study was to determine if late adolescents (18-25 year olds) perceived differences between their own knowledge about interactive technology and what they thought their parents knew about the same technology. Secondly, the study sought to understand how differences in these perceived technology were related to adolescent perceptions about their interactions with their parents. The parent-child relationship characteristics of interest in this study were parent-child quality time, parent-child conflict, and parents' knowledge of their childrens' behaviors.

Late adolescents did perceive generational differences in technology knowledge in the areas of video chat, cell phones, general social networking, Twitter, and email. Late adolescents indicated that they thought they knew more about each of these technologies when compared to what they thought their parents knew. These differences in knowledge are referred to as a digital generation gap. This was the first study to quantify this perceived digital generation gap.

Results indicated that when a perceived digital generation gap was present, late adolescents reported different amounts of quality time, conflict, and parental-knowledge of their behaviors within their parent-child relationships. For example, when late adolescents perceived they had more knowledge than their mothers about basic email technology, they also reported that their mothers had less knowledge about their behaviors. As a whole, this research project moves a step forward in identifying how interactive technology is influencing parent-child relationships.

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My parents, siblings, and extended family have been very supportive during my graduate education. I appreciate the patience, encouragement, financial support, and confidence they have given me in the completion of this doctoral degree. I could not have completed this educational achievement without them.

<div style="text-align: right">J. Mitch Vaterlaus</div>

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CHAPTER I

INTRODUCTION

This chapter provides a brief review of the empirical and social observations of a "generation gap" that was thought to be real in American society during the 1960s. The rapid evolution of technology, like the social and political changes leading to the generation gap, has caused some to believe that we are now experiencing another generational gap—the digital generation gap. The digital generation gap is used to describe generational differences in the understanding and use of technology. This study highlights late adolescents' perspectives of the digital generation gap. Finally, the purpose of the current study is addressed.

Generation Gap

Throughout history when aberrant social phenomena are observed, a variety of explanations are proposed. For example, in the 1960s, social, behavioral, and political generational differences were used to explain the presumed incongruence in values and attitudes between parents and their adolescent children. This "generation gap" was heavily researched in the 1960s and 1970s (Smith, 2000). Generation differences were observable in societal movements or changes (Brunswick, 1970).

The post-World War II "Baby Boom" resulted in large numbers of adolescents and young adults in the 1960s and 1970s (Maga, 2003). Youth in the 1950s generally conformed to social expectations. Few differences in expectations between parents and children were readily evident during this time period. Early in the 1960s parent and

adolescent beliefs were relatively similar concerning social behavior and expectations. These shared views did not last and a gap developed between the older and younger generation as time progressed into the 1970s.

Coincidently, society made dramatic shifts during the 1960s. During this decade segregation was abolished and the feminist movement produced more equal rights for women (Maga, 2003). Social awareness led to changes in political ideology. More liberal political views led to legislation concerning health, safety, and environmentalism (Maga, 2003). Televisions became more accessible and youth culture thrived with rock-and-roll music and drive-in movies. The United States was shocked by the assassination of their President in 1963. Additionally, the decade experienced the ongoing Vietnam War and the military draft was in place.

The generation gap was manifest in the movement away from rigid societal rules (Falk & Falk, 2005). Youth during the 1960s and 1970s participated in movements for free speech on college campuses and were active in war protests. The sexual repression from previous generations dissipated with sexual liberation. The Food and Drug Administration approved a contraceptive pill in 1960 (Maga, 2003) and the common slogan of the time was, "make love, not war" (Falk & Falk, 2005, p. 188). Illicit drug use was another important difference between the older and younger generations. Some youth during this time period felt that drugs, such as LSD, would help them reach a higher state of consciousness (Falk & Falk, 2005).

These emerging youth phenomena during the 1960s and 1970s were explained academically by the concept of the "generation gap." However, research seeking to

increase our understanding of these generational differences waned following the 1970s because many research studies indicated that the gap was small or insignificant (Jacobsen, Berry, & Olson, 1975). For example, Jacobsen and colleagues' (1975) results indicated much more agreement between parents and adolescents than expected in their generation gap research. They concluded that the generation gap may not be a universal phenomenon. However, Acock and Bengston (1980) proposed that the wrong questions were being asked about the generation gap, "Rather than ask, 'To what extent is the generation gap real?' we ask, 'Where is the reality of the generation gap?'" (p. 502). When this question was pursued through research, perceptions of parental attitudes (not actual parent attitudes) were surprisingly strong predictors of late-adolescents' self-reported attitudes. Acock and Bengston (1980) concluded that the generation gap is real when perceived differences exist.

Generation Gaps and Technology

Interest in generational differences has resurfaced with the evolution of technology and media (Clark, 2009; Livingstone, 2003). Even in the 1960s there were differences in the use of technology between parents and adolescents (Maga, 2003). More parents watched television in the comfort of their own home while adolescents preferred to go to drive-in movies. Technology has seen some dramatic shifts from 1960 to the present. Televisions have become more prevalent in children's bedrooms (Jordan et al., 2010). Video game devices are no longer limited to consoles that attach to televisions, but are now available in the form of handheld devices or even cellular

phones. The extent and rapidity of technological innovation, especially during the past three decades, has sparked renewed interest in generational differences (Clark, 2009; Livingstone, 2003).

Interactive Technology

Computers have increased in accessibility as they also have shrunk in size and price. The advent of the personal computer and the internet has centralized access to a variety of media sources. The internet is now used to play video games, view movies, watch television shows, and download music (Jones, 2009). Adolescents who use the internet are no longer restricted to viewing media, but can also communicate socially with others across the globe (Courtois, Mechant, De Marez, & Verleye, 2009). Email, social-networking, chat rooms, and video chat (e.g., Skype) allow communication to be instant and even face-to-face (Jones, 2009). It is not uncommon for adolescents to know what their friends are doing through Facebook status updates or Tweets.

Communication outlets provided by the internet are evolving quickly. For example, MySpace was quickly replaced with the advent of the more exclusive Facebook (Arango, 2011). The technology used to access the internet has also evolved. The personal desktop computer morphed into the laptops, notebooks, and tablets. Now the internet can be accessed on devices as small as iPods and cell phones whenever and wherever.

Cell phones that permit internet access are referred to as "Smartphones." The original "brick sized" cell phones, like Zack Morris had in the 90s teen show "Saved by

the Bell," have become sleek and pocket-sized. Cell phone features include talking and texting which have also become regular means of social communication for adolescents (Jones, 2009). It is not unusual to walk into a store, a school, or a social event and see adolescents with phones pressed against their ear, or heads down with both hands texting furiously. Texting plans for cell phones originally started with 400-500 texts monthly and now most cell phone plans feature unlimited texting (see Wortham, 2011).

Cell phone communication has become a family affair and manufacturers have targeted the family. For example, Verizon Wireless markets plans with multiple lines as a "Family SharePlan" (see www.verizonwireless.com). Some parents use cell phones as a way of monitoring their children (Williams & Williams, 2005). Some cell phones even contain tracking technology so parents can use a global positioning system (GPS) to identify their child's location. Parents can also monitor by simply calling or text messaging their children's cell phones.

Cell phones provide a means for parents to monitor the location and activities of their children, but the private nature of the cell phone can also make it difficult for parents to monitor the content that is viewed or distributed using a cell phone (Green, 2001). News media have presented articles concerning the potential risks of adolescent cell phone and internet use. On June 3, 2011, two teenagers were arrested and charged in Florida for transmission of pornography via cell phones (Pepperd, 2011). Another article published on January 24, 2010 indicated that a teenager committed suicide after being bullied on Facebook and through text messages by peers at her new high school (McCabe, 1010). Tragedies are not limited to just younger adolescents. On March 16,

2012, a college student from Rutgers University was convicted of invasion of privacy and 14 other counts when he used video chat to expose his roommate's gay relationship (Boyle, 2012). The roommate committed suicide in 2010, just days after he discovered that his privacy was invaded. He announced his suicide as his final Facebook post. Obviously most parents and educators are concerned about the safety of children of all ages in this digitally driven world.

Adolescents are spending about six-and-a-half hours with different media sources each day (Rideout, Foehr, & Roberts, 2010) and concern over media influence is not a new development. There are ample studies that have identified significant relationships between media violence and children's violent behavior (Strasburger, 2004). Research reports concerning the relationship between exposure to media and body satisfaction (van den Berg et al., 2007), sexual behavior (Collins et al., 2004), drug and alcohol use (Dalton et al., 2006), and other deviant behaviors are abundant (Villani, 2001).

To-date, the media sources that have been empirically investigated typically have been non-interactive (e.g., watching movies, television). With evolving technology, however, adolescents can continue to access non-interactive technology and also access interactive media to create media and engage in social communication. There have been speculations concerning the potential influences of these new interactive technologies. For example, some have asserted that digital social interaction provides an avenue for more advanced bullying (e.g., cyber bullying; Keith & Martin, 2005), sexual facilitation (Kanuga & Rosenfeld, 2004), identity development (Pempek, Yermolayeva, & Calvert,

2008), and self-expression (Livingstone, 2008), but supporting empirical evidence is scarce.

A New Generation Gap

Parents are typically the people who are expected to construct and maintain environments in order to protect their children. For example, in Michelle Obama's "Let's Move" campaign there is a "Parent" link that encourages practices such as turning the television off and eating a healthy dinner as a family. There is not a link for "Children" (see www.letsmove.gov). The same is true with media safety and facilitation. Media articles and newscasts warn of the dangers of media, offer tips, and attempt to sell monitoring software to parents (Gelles, 2011). Parents are expected to be the gatekeepers of the media that is appearing on their children's private devices.

Social communication is changing with the fast paced nature of technological development. Adolescents who have been raised during the past 25 years quickly adapt to new developments in technology. Not surprisingly, researchers have identified that adolescents and adults have different perceptions of technology (Clark, 2009; Oksman & Turtiainen, 2004). Prensky (2001) highlighted these differences by referring to adolescents or the younger generation as digital natives and the older generation as digital immigrants. The generational differences in adoption and use of technology are being referred to as the digital generation gap (Clark, 2009; Livingstone, 2003).

Evidence of differences in understanding and use of technology between adolescents and parents has emerged in qualitative interviews (Clark, 2009). Additional

empirical evidence is needed to identify the validity of this phenomenon. Some research has focused on technological generation differences between adolescents and their parents in order to understand the potential parent-child relational consequences and child outcomes (Mesch, 2006b; Ribak, 2001; Subrahmanyam & Greenfield, 2008). The majority of this research has focused on adolescents under the age of 17. Additional research is needed to understand the consequences of the potential digital generation gap for parent-child relationships when children move into later adolescence.

Late Adolescence

When does adolescence end and adulthood begin? Different ideas exist concerning the age that an adolescent reaches adulthood (Arnett, 2000; Bynner, 2007; Feixa, 2011). Foundational adolescent scholars, such as G. Stanley Hall (1904), proposed that the time period of adolescence extended until 22-25 years of age. This perception has shifted as the ages of pubertal onset have declined overtime (Feixa, 2011) and as adolescents have become tied to the educational system (Bynner, 2007). A more contemporary perspective would declare the end of adolescence at the age of 18 (Feixa, 2011).

Still the defined time period of adolescence is openly discussed among human development scholars. Research indicates that 18- to 25-year-olds, in general, are delaying marriage, parenthood, and procurement of their own residences when compared to previous generations (Arnett, 2000). Many in this age group have never left home and the term "boomerang generation" has been used to describe the 18-to 25-year-olds who

do leave home and then move back into their parent's house sometime later (Furman, 2005). Arnett (2000) reported that people between the ages of 18 to 25 years old are taking on some responsibilities associated with adult independence, but continue to rely on parents and other adults. Reliance on parents includes financial support, living arrangements, and emotional support (Aquilino, 2006). Continued dependence provides a unique challenge for parents because their children need to develop independence while still receiving support. Parents and adolescents must each negotiate and develop a balance of independence and connectedness within their relationship. This is a process which is common in adolescence and has been referred to as individuation (Grotevant & Cooper, 1986). Individuation, likely continues among the 18- to 25-year-olds who have never left home as well as the 18- to 25-year-olds who have moved out and then returned.

The tasks of adolescence are often incomplete at the conclusion of high school (Waterman, 1982) and typically extend into the early twenties (Shwartz, Côté, & Arnett, 2005). Arnett (2000) proposed that a continuation of these tasks and parental dependence among 18- to 25-year-olds may be representative of a new developmental time period which he has coined *emerging adulthood*. Other researchers, such as Brynner (2007), disagree and view the phenomenon as an extension of the time period of adolescence across the life-course. An extension of the adolescence perspective was used in this study because the research implies that the tasks have not changed, but appear to have extended into later adolescence. For the purpose of this study, people between the ages of 18 to 25 years old are referred to as late adolescents.

Purpose of the Current Study

Efforts to document the existence of a digital generation gap between adolescents and their parents are just beginning (Clark, 2009). Interactive technology has the potential to either enhance or hinder the completion of tasks that are necessary for the transition from adolescence to adulthood. As children move into late adolescence (18-25 years old), many achieve some aspects of independence, but continue to rely on their parents and other adults (Arnett, 2000). Previous research on generation gaps identified little difference between parents and adolescents when actual gaps were investigated (Jacobsen et al., 1975). The current exploratory study adopted Acock and Bengston's (1980) approach by investigating "*Where* a digital generation gap is real" by soliciting the perceptions of late adolescents' own technological knowledge and perceptions of their parent's technological knowledge. This study explored the relationship between the perceived digital generation gap and perceived parent-late adolescent relationship characteristics. The relationship characteristics investigated from a late adolescent perspective were parent-child quality time, parent-child conflict, and parental-knowledge of children's behaviors.

CHAPTER II

LITERATURE REVIEW

This chapter begins with an introduction to the process of individuation

(Grotevant & Cooper, 1986) in order to frame this study on late-adolescents' perceptions

of parent-child relationship characteristics. Interactive technology is discussed as a way

of promoting individuality and connectedness. The proposition of a perceived digital

generation gap between late adolescents and their parents is presented. The perceived

digital generation gap may be related to late adolescents' perceptions of their parent-child

relationship characteristics including parent-child conflict, parent-child quality time, and

parental-knowledge of children's behavior. The review ends with research questions

aimed at identifying a perceived digital generation gap and the gap's influence on late

adolescents' perceptions of their parent-child relationship characteristics.

Framework

Parent-child relations have been presented as contexts for individual development

(Grotevant & Cooper, 1986). These parent-child relations evolve and change over the

course of development. Several perspectives have been presented concerning how

parent-child relations change when children enter adolescence. The common theme

amongst these perspectives centers on adolescent independence from parents. Grotevant

and Cooper (1986) used previous clinical research and their own research to develop a

model of parent-adolescent individuation. Individuation is defined as a quality of a

parent-adolescent relationship that is generated by both of its members. Individuation

can be identified through the interplay of *individuality* and *connectedness* by both the parent and the adolescent.

Grotevant and Cooper (1986) explained how individuality and connectedness are exhibited in parent-child relations. Individuality is exhibited in self-assertion and separateness. Self-assertion is the ability to be aware of and take responsibility for one's point of view. Separateness is a person's ability to differentiate themselves from others. Both of these qualities are regarded as traits of emotional maturity. Connectedness is exhibited in mutuality and permeability. Mutuality is apparent when an individual shows respect and sensitivity for the beliefs, ideas, and feelings of others. Permeability refers to the openness and responsiveness of an individual to others' ideas. These qualities allow individuals in relationships to feel supported and to develop their own point of view.

Grotevant and Cooper (1986) proposed that the relationship quality of individuation is negotiated by parents and adolescents even into young adulthood. This framework fits nicely with the extension of adolescent perspective. Brynner (2007) indicated that many of the developmental tasks that were thought to be accomplished in the teenage years are not being accomplished until late adolescence (18-25 years old). More people between the ages of 18-25 are living at home or moving home after moving out, remaining financially dependent on parents, and marrying at older ages than in earlier decades (Arnett, 2000). It is also true that more people in this age group are enrolling in higher education (U.S. Department of Education, 2011). The percentage of high school graduates who immediately enroll in two- or four-year educational institutions has increased between the years 1975 (51%) and 2009 (70%; U.S.

Department of Education, 2011). However, today's parents are taking a more active role in their children's education than previous generations (Cullaty, 2011; Daniel, Evans, & Scott, 2001). Parents are involved in their children's decision process in choosing an institution, paying for tuition, providing a support system, and parents continue to be an active influence in their child's decision-making while attending school (Daniel et al., 2001). It appears that late adolescents are becoming independent in some areas of their lives, but are continuing to rely on their parents for a variety of resources (Arnett, 2000).

The model of parent-adolescent individuation provides a helpful framework for understanding interactive technologies' (e.g., cell phones, email, video chat, social networking) influence on parent-late adolescent relationships. Interactive technology represents several mediums that can provide avenues for individuality and connectedness. For example, 98% of parents in one study said the number one reason for providing their child with a cell phone was to remain connected (Lenhart, Ling, Campbell, & Purcell, 2010). Another qualitative study on cell phone ownership determined that adolescents and their mothers frequently mentioned increased adolescent autonomy with cell phone ownership (Blair & Fletcher, 2011). These studies indicate that cell phones are perceived as tools that promote aspects of both connection and individuality. This mode of communication and the distance made available with technology may influence how parents and late adolescents negotiate individuation in their relationships. The influence of technology on this process may be related to late adolescents' perceptions of their parents' ability or inability to use different interactive technologies.

Digital Generation Gap

Research on technological differences between people has generally focused on the accessibility to information technology (Compaine, 2001). The term *digital divide* has been used to refer to the perceived gap between ethnic, racial, or geographic groups who do not have access to the latest technology and those that do (Compaine, 2001). Recent evidence has shown that the divide in internet accessibility is fairly small between adolescents and adults in the United States, with 93.3% of 12-17 year olds online (Zhao, 2009), and a smaller number of adults (78%; Pew Research Center, 2011). The advent of cell phones has also contributed to the closing of this divide. One study discovered that 21% of adolescents who typically did not have access to the internet now have gained internet accessibility on their cell phones (Lenhart et al., 2010). Adolescent cell phone ownership has increased from 45% in 2004 to 75% in 2009, and children are also becoming cell phone owners at younger ages (Lenhart et al., 2010). Adult cell phone ownership has increased from 65% in 2006 (Lenhart, 2010a) to 85% in 2010 (Smith, 2010).

These statistics show that a majority of adults and adolescents in the United States have access to interactive technology. Hargittai (2002) stated that digital divide research has focused on the limited dichotomy of those who have and those who do not have access to technology, and more research is needed concerning people's ability to use the technology. The purpose of this study is to identify late-adolescents' perceptions of their own ability and their perceptions of their parent's ability to use interactive technology. Where the focus of this study is on perceived generational differences in the

ability to use technology, rather than differences in generational accessibility to technology, the term *digital generation gap* is used. In this study, digital generation gap refers to the late adolescent's perceived gap in technological knowledge or expertise between what they know and what they believe their parents know about various interactive technologies.

Adolescents who have experienced this time period of fast-paced technological development adapt to new technologies with ease (Facer, Sutherland, Furlong, & Furlong, 2001). Children begin using technology at an early age and are not intimidated by computers (Kelty, 2000). Because the younger generation has grown up with technology and developed flexible expertise, youth between the ages of 12 and 18 are now considered digital natives (Courtois et al., 2009). Young people 'know what to do' with new technologies because they utilize their experience with pre-existing technology (Facer et al., 2001).

Adults have a harder time learning computer skills when compared to adolescents (Kelty, 2000). Many adults have grown into this technological age and may feel uncomfortable when there are new developments in technology. As technologies have evolved some research has indicated that children and adolescents have taken expert roles in their households (Kolodinsky, Cranwell, & Rowe, 2004; Livingstone, 2003; Oksman & Turtianinen, 2004). This is apparent with both the internet (Livingstone, 2003) and cell phone technology (Oksman & Turtianinen, 2004). Livingstone (2003) indicated that children acquire knowledge and skills about the internet and then teach their parents. Oksman and Turtianinen (2004) observed that teens typically teach their parents and

grandparents to use cell phone technology. The expert status of adolescents has also led to the development of education programs where adolescents teach older adults how to use technology (Kolodinsky et al., 2004).

During the past three decades technology available in the home has evolved from less interactive mediums (e.g., television) to more interactive mediums (e.g., internet; Wartella & Jennings, 2009). There is some evidence indicating that the younger generation prefers interactive technology. Xenos and Foot (2008) described the results of a late adolescent focus group that discussed a podcast produced by a presidential candidate in 2004. Participants expressed a lack of interest with the podcast because it was not interactive. The authors concluded, "Clearly, coproductive interactivity is foundational to the way that young people, more than any other age group, engage with the internet" (Xenos & Foot, 2008, p. 57). This theme emerged as well in a study conducted with 12- to 18-year-old adolescents ($N = 836$) in Belgium that investigated motivations for participating with interactive internet material (Courtois et al., 2009). These researchers indicated that social motivation was indicative of each type of interactive internet material (e.g., social networking, video sharing) that was examined among adolescent participants.

Both adults and children use technology to build meaningful relationships and to extend social interaction (Thurlow & McKay, 2003). However, adults ages 34-45, with the exception of emailing, are more likely than their younger counterparts to utilize non-interactive media online (Zickuhr, 2010). Although some adults do participate in interactive internet activities, adolescents do so more. Adolescents have the top internet

usage statistics and are also recognized as early adopters of instant messaging, social

networking, and peer-to-peer file sharing (Xenos & Foot, 2008). The use of cell phones

also differs between the generations. The older generations typically use their cell

phones only for the basic features. For example, adults 35 and older typically do not use

their cell phones for non-voice functions (e.g., taking pictures and text messaging;

Zickuhr, 2011). Adolescents, however, utilize a wide range of functions on their cell

phones including going online, listening to music, and emailing (Lenhart et al., 2010).

Differences in parent and adolescent perceptions of internet and cell phone use

have been identified. A Canadian study used questionnaires with students ($N = 5,682$)

and interviews with parents from 1,081 households with children between the ages of 6 to

16 to investigate generationally different perceptions of children's internet use (Swift &

Taylor, 2003). Participants were asked to rank the most significant online activities for

children. The most popular rankings among the student participants included

downloading music first, followed by emailing. Instant messaging ranked fifth and

homework ranked eighth among the most significant online activities. A major

difference was identified with parents who ranked homework as the number one

significant online activity for children.

A study conducted in Finland identified significant differences in perceptions of

cell phones between parents and adolescents (Oksman & Turtianinen, 2004). Over 1,000

interviews and various other forms of data (e.g., observation of youth events, 7,800 text

messages) were collected. Findings revealed that adolescents and parents note different

reasons for cell phone use. Parents perceive cell phones as a way to maintain contact

with, and to ensure the safety of their children. Adolescents commonly used this argument in order to obtain a cell phone; however, adolescents most often touted cell phone technology as a way to connect and to stay close with their friends.

Although there are differences in parent-adolescent perceptions, parents tend to believe that the internet can be a helpful educational tool for their children (Thurlow & McKay, 2003). Nevertheless, there continues to be parental concern about children's privacy and ease of access to indecent and inappropriate material. One Canadian study used questionnaires with late adolescents ($n = 2,300$) and in-depth interviews with adult employers ($n = 16$) to identify privacy perceptions in social networking (Levin et al., 2008). A difference was identified concerning privacy in social networking between young Canadians and the older generation who employ them. In general, late adolescents felt comfortable displaying a variety of content about themselves on social networking sites. They considered their information private as long as it was limited to their social network. Furthermore, 23.3% of the late adolescent sample was not concerned about people they do not know having access to their information. Interviewed employers commonly viewed any information displayed on social networking sites as public information and rejected the notion of network privacy. Late adolescents and their employers have different perceptions of what constitutes public and private information online.

Subrahmanyam and Greenfield (2008), in their review of adolescent online communication, indicated that parents had concerns about their adolescents' online activities. However, parents typically did not know what their children were accessing

and, therefore, had difficulty setting limits and/or monitoring their online activities. The authors suggested that future research is necessary to see if parents lack the knowledge or skills needed to use the communication technology, or if the lack of monitoring is indicative of poor parenting skills.

In reviewing the literature it is apparent that there are differences in interactive technology use between adolescents and their parents. The existing research implicitly suggests that parents and their children may be using interactive technology to increase individuality and connectedness in their relationships. The literature highlights differences in generational perceptions of cell phones and the internet, privacy concerns, and differences in time spent with the internet and cell phones. These differences hint at a perceived digital generation gap between parents and adolescents. However, given the scant research documenting generational differences and the absence of studies that seek to clarify the size and qualitative indicators of the digital generation gap, research is needed to document ways in which uses of these technologies affect parent-adolescent relationships. Clearly there is a need to measure perceived differences between parent and adolescent technological knowledge with interactive technology (i.e., the internet and cell phones) in order to investigate the influence of the gap on perceived parent-child relations.

Parent-Late Adolescent Relationship Characteristics

Parent-child relations continue to be important during late adolescence (Padilla-Walker, Nelson, Madsen, & Barry, 2008). These relationships appear to be different

during this time period of development because late adolescents are becoming semi-autonomous (Arnett, 2000). Late adolescents take on some autonomy, but continue to rely on their parents for a variety of resources (Arnett, 2000). Parents and late adolescent offspring continue to negotiate individuation in their relationship (Grotevant & Cooper, 1986). A variety of parent-late adolescent relationship characteristics may influence and be evidence of this individuation. Late adolescents' perceptions of parent-child relationship characteristics may be enhanced or inhibited by a perceived digital generation gap. Perceptions of parent-child quality time, parent-child conflict, and parental-knowledge of late adolescent behavior were the selected parent-child characteristics for this study. Each perceived characteristic was evaluated in relation to a perceived digital generation gap.

Parent-Child Quality Time

There has been continued empirical interest in the time that parents and adolescents spend together. Researchers indicate there are multiple influences on parent-child time such as developmental changes related to parental employment (Davis, Crouter, & McHale, 2006; Demo, 1992), birth order (Price, 2008), and family structure (Asmussen & Larson, 1991). Few studies are available concerning parent-child quality time when teenagers move into late adolescence. Additionally, limited information is available concerning the relationship between technology and the quality of time spent between parents and their children.

As children progress into adolescence the time they spend with their family decreases. Larson and Richards (1991) recruited a sample of 9- to 15-year-olds ($N = 483$)

to identify changes in adolescent companionship over time. Participants were given pagers and asked to comment on their current environment and experience at random times. Ninth graders spent about half as much time with their families when compared to their younger counterparts (fifth grade). There were no significant differences when looking at one-on-one interactions with fathers and mothers between these age groups. However, time spent alone with mothers or fathers accounted for less than 5% of companionship time for both fifth- and ninth-grade students. These findings were supported in another cross-sectional study. The authors concluded that older adolescents typically participated in fewer interactive family activities, but they did not reduce time speaking with their families (Larson, Richards, Moneta, Holmbeck, & Duckett, 1996).

The decrease in adolescent-family time together appears to relate to increasing age. Adolescents typically experience increased extracurricular demands and a developmental desire for autonomy from their parents (Fulkerson, Neumark-Sztainer, & Story, 2006). One study investigated adolescent participation at family meals (Fulkerson et al., 2006). Older adolescents (10th to 12th grade students) reported that they attended fewer family meals when compared to younger adolescents (7th to 9th grade students). It is interesting to note that there was no difference in perceptions of family togetherness, even though older adolescents participated in fewer family meals. Family meals were viewed by adolescents as a time for the family to talk.

The majority of studies that have looked at parent-adolescent time have looked at "quantity" of time rather than "quality" of time. Quality of time is more than just being in the same place together, but is apparent when the adolescent and parent feel like they

are together (Fallon & Bowles, 1997). Quality time occurs when an adolescent has the

opportunity to interact with someone with whom they have a trusting or intimate

relationship. Price (2008) evaluated differences in parent-child quality time based on

birth order. Survey data from the American Time Use Survey was used to identify

parent-child quality time. Quality time was operationalized as parent-child activities

where the child was the primary focus or times in which the child received reasonable

amounts of interaction (e.g., having a meal together). Birth order differences in quality

time were identified. For example, a first-born child (ranging in age from 4-13) received

20-25 minutes more quality time with their father and 25-30 minutes more quality time

with their mother each day, when compared to the second-born child in a 2-child family.

 Parent-child quality time in late adolescence. Arnett (2004) indicated that late

adolescents who leave home are typically psychologically closer to their parents and are

more open with their parents than they were before leaving home. These differences

imply a continuation of contact between parents and late adolescents. However, quality

time between parents and late adolescents would intuitively occur in different ways (e.g.,

video chat versus in the same room) depending on the living arrangement of the late

adolescent. Also, as parents and late adolescents are negotiating individuation, quality

time may be seen as evidence of connectedness and changes in the type or content of

communication may be evidence of separateness.

 Cullaty (2011) investigated the role of parental involvement in autonomy

development among college students. A qualitative approach was used to interview late

adolescents ($N = 18$) concerning their perceptions of what parental interactions

encouraged or inhibited their development of autonomy. Participants commonly reported that *the way* their parents communicated with them influenced their autonomy. Late adolescents perceived greater autonomy when their parents communicated with them in a manner typical to adult or peer relationships—offering advice rather than maintaining control. When this type of interaction occurred adolescents perceived feelings of support. This study provides some insights to the type of interaction that constitutes support and togetherness and may be construed as evidence of quality time in late adolescence.

In addition to understanding what interactions may constitute parent-child quality time in late adolescence, it is also important to understand what role parent-child time plays in late adolescent development. For example, in the previous study, when late adolescents perceived supportive parent-child interactions they also perceived increased autonomy development (Cullaty, 2011). LaBrie and Cail (2011) looked at the role of perceptions of parental interaction and college students' ($N = 759$) drinking behaviors. First-year female students who had reported daily contact with their parents showed significantly less intention to drink and less alcohol consumption than students who reported less frequent parental contact. Although this study focuses on the frequency of time it provides some emerging evidence concerning the relationship between parent-child contact in late adolescence. In reviewing the literature, it is apparent that little is known about parent-late adolescent quality time. Additional research is necessary to determine the role that quality time plays in late adolescence.

Parents, children, and interactive technology. With the advent and evolution of technology, research attention turned to technology's influence on parent-adolescent

time spent together. Montemayor (1982) examined time adolescents spent with parents

and peers. Sixty-four adolescents were interviewed over the phone for this study. One

finding was that adolescents had 1.5 hours of free play with their parents a day. The most

common activity parents and adolescents engaged in was watching television together.

Television is typically seen as a passive experience that is often done alone. Time spent

watching television with parents was not significantly different than adolescent free time

spent alone. More recent research has indicated that parent-adolescent television time

actually increases as an adolescent ages (Dubas & Gerris, 2002). One study solicited

Dutch parents' perspectives ($n = 305$ mothers, $n = 255$ fathers) in order to understand

changes in parent-adolescent time spent eating, going somewhere, doing something, and

watching television together over a 5-year period. Parents reported an average increase

of 25 minutes watching television together over the 5-year time period. However, there

was a decrease of 14 minutes going somewhere with their adolescent. Television may

increase the quantity of time parents and adolescents spend together, but limit their

quality time.

Media and technology may serve as distractions from quality time between

parents and adolescents. There are now technology and media devices that are readily

accessible on an individual level. Adolescents use multiple media sources at one time

(e.g., watch TV, check email, electronic games, and download music). This phenomenon

has been referred to as media multitasking (Rideout et al., 2010). A 4-year video study

looked at reunions between working parents and their children (Ochs, Graesch, Mittman,

Bradbury, & Repetti, 2006). Videoed interactions indicated that when the working parent

(usually the father) walked through the door the children ignored him about half of the time. Instead of connecting with their parent, these children continued multitasking with their electronic gadgets.

Most of the limited research on technology's influence on parent-child quality time has focused on non-interactive media. The majority of adolescents in the United States now have access to the internet (Zhao, 2009) and have personal cell phones (Lenhart et al., 2010). Internet and cell phone technology provide access to these more interactive mediums (e.g., texting, social networking). These technologies are designed to be used independently which could potentially limit the quantity and quality of parent-adolescent time. However, they are also designed to be interactive which could potentially increase time spent communicating between parents and adolescents (e.g., talking on the phone, chatting online when parents are at work).

One study investigated parent-child time in association with interactive technology. Two hundred and eleven late adolescents (19-22 years old) participated in an online survey about perceptions of electronic communication with their parents (Gentzler, Oberhauser, Westerman, & Nadorff, 2011). Late adolescents who spent time talking to their parents over the phone were more likely to report close, satisfying, and supportive parent-child relationships. Late adolescents who spent time communicating with their parents using social networking reported more conflict, anxious attachments, and higher levels of loneliness. Another study surveyed 196 parent-adolescent dyads concerning cell phone calls to one another (Weisskirch, 2010). Parents perceived greater closeness and communication when adolescents initiated phone calls seeking social

support. Adolescents perceived increases in conflict when parents initiated calls to monitor their behaviors. Apparently parent-adolescent cell phone communication can be perceived both as a quality time activity and as a way of monitoring behavior.

Current literature indicates that technology and media may hinder parent-adolescent quality time, possibly increasing individuality while limiting connectedness. Existing studies have typically investigated the influence of non-interactive media. With increased access to the internet and cell phones, it is apparent that little is known about their influence on parent-child quality time. Intuitively, the individual nature of the internet and cell phones would imply a decrease in the quantity and quality of parent-adolescent time. However, some evidence is available that shows perceived positive relationship outcomes when parents and their children spend time talking on the phone (Gentzler et al., 2011; Weisskirch, 2010). The limited research suggests that there are different perceptions of the interactive media use between parents and their adolescent children. This may be related to the differences in parent-child interactive technology knowledge. Research specific to parent and late adolescent quality time is limited and literature on the relationship between parent-child quality time and the perceived digital generation gap is unavailable. Additional research is needed to understand the influence of the perceived digital generation gap on perceptions of parent and late adolescent quality time.

Parent-Child Conflict

Parent-adolescent conflict has been a research topic for a long period of time. Hall (1904) introduced the concept of "Storm and Stress" in adolescent development to

explain the biological and evolutionary nature of parent-adolescent conflict. However, the storm and stress proposition received little empirical support and subsequently was challenged by several studies in the late 1960s and early 1970s (Steinberg, 2001). Community and school samples (instead of clinical samples) produced results that showed that the majority of adolescents reported having happy and even pleasant relationships with their parents.

However, some researchers believed that these happy and pleasant parent-child relationships became conflicted when there were historical movements or change. Davis (1940) stated:

> Extremely rapid change in modern civilization, in contrast to most societies, tends to increase parent-youth conflict, for within a fast-changing social order the time-interval between generations, ordinarily but a mere moment in the life of a social system, become historically significant, thereby creating a hiatus between one generation and the next. (p. 523)

According to this line of thought, social changes such as war or social movements would extend the gap between the generations, thus explaining increased conflict. Montemayor (1983) reviewed 17 studies on parent-adolescent conflict published between the years 1929 and 1982. He concluded that the same day-to-day problems (e.g., chores, friends, when they go out) were consistently mentioned as sources of parent-child conflict in all of the studies, even through time periods of war and social movements.

The literature does indicate that parents and adolescents do consistently experience some conflict over day-to-day topics (Galambos & Almeida, 1992). Montemayor (1983) indicated that the earliest data collected on parent-adolescent conflict was done in the Middleton study during the late 1920s. Researchers asked adolescents to

mark on a checklist the subjects with which they typically disagreed with their parents. The topics were generally "the hours you get in at night" and "the number of times you go out on school nights." This checklist was used again with Middletown adolescents, six decades later, in the 1980s and the results were practically identical (Montemayor, 1983). Again, day-to-day topics were more commonly mentioned than values and substance use. These findings indicate that the topics of parent-adolescent conflict typically represent day-to-day topics, even in different decades. Barber (1994) studied a sample of 1,828 Caucasian, Black, and Hispanic families to measure parent-adolescent conflict. Consistent with previous research, conflict usually occurred over everyday matters such as how the adolescent dressed or chores, not over large issues such as drugs and sex. This was consistent across ethnicity.

Recognizing that many of the conflictual topics between parents and adolescents are day-to-day subjects, the *Issues Checklist* was developed to measure these day-to-day conflicts in more detail (Robin & Foster, 1989). The checklist is composed of a variety of issues of parent-child conflict and allows the adolescent to rank the conflict intensity of each topic. Allison and Schultz (2004) had 357 youth between the ages of 11 and 14 complete the *Issues Checklist*. The most frequent issues were aggregated into domains to indicate the most frequent conflictual issues during early adolescence and the conflict intensity rating for each domain. Adolescents perceived that the most frequent parent-child conflicts occurred in the domain of household chores. The irritating/disruptive behavior domain was reported to have the highest conflict intensity. With the advances in and increased accessibility to technology some new topics were presented in this study.

Telephone use was aggregated into the irritating/disruptive behavior domain. Conflict over television ranked as the 4th highest topic of parent-adolescent conflict and ranked ninth highest in conflict intensity.

Topics of conflict between parents and adolescents are day-to-day issues (Allison & Schultz, 2004; Barber, 1994; Montemayor, 1983). It appears that some of the day-to-day topics that parents and adolescents argue about have shifted with increases in technology and media use (Allison & Schultz, 2004). Montemayor (1982) looked beyond the topics of parent and adolescent arguments to begin to understand the typical length of these arguments. Sixty-four adolescents were interviewed over the phone on three different days. These adolescents reported a total of 68 arguments. Adolescents perceived that the average parent-child argument lasted 11 minutes. Most of the parent-adolescent conflict was between mothers and daughters. Although the topics and the length of conflict may seem minor, this does not mean that adolescence is not a difficult time period for both parents and their children (Arnett, 1999). Repeated minor irritations may lead to increased stress.

Research has indicated that there can be negative outcomes from parent-adolescent conflict. A longitudinal study with 168 dual earner families over a 2-year time period was conducted to identify the influence of conflict on academic achievement (Dotterer, Hoffman, Crouter, & McHale, 2008). The study focused on the oldest adolescent in the household. More frequent parent-adolescent conflict during the first year of the study predicted lower academic achievement during the second year of the study. Petersen (1988), after reviewing studies on the topic of parent-child conflict,

concluded that frequent levels of conflict were related to adolescents running away, having mental health difficulties, and participating in antisocial and deviant behavior. A cross-sectional study that evaluated 12- to 16-year-old adolescents' ($n = 429$) and their parents' (mothers $n = 429$ and fathers $n = 429$) perceptions of conflict indicated that adolescents who reported less conflict generally had better mental health (Shek, 1997).

Recognizing that there are negative components of parent-child conflict, perceptions of conflict are important in finding the balance between attachment and separation from parents in late adolescence (Schwartz & Buboltz, 2004). Undergraduate students ($N = 368$) shared their perceptions on measures of parental attachment and psychological separation (which included items assessing parent-child conflict). The findings suggested that a balance between attachment and separation in late adolescence may include conflict with both parents. The variables investigated in this study looked at late adolescents' perceptions of connectedness and separateness in their parent-child relationships. It may be that conflict plays an important role in negotiating individuation in parent-late adolescent relationships.

Parent-child conflict in late adolescence. Studies have shown that parent-child conflict decreases as an` adolescent ages, but low levels of parent-child conflict remain (Laursen, Coy, & Collins, 1998; Smetana & Gaines, 1999). Research on parent-adolescent conflict in late adolescence is limited (Montemayor, 1983; Renk et al., 2006). One study examined a sample of 273 college students between the ages of 19 and 22 (Renk et al., 2006). The majority of students did not live with their parents (75.1%), although they did report weekly contact with their biological parents (87.7% contact with

mother; 76.7% contact with father). Open-ended questions were used to identify the

three most common topics of conflict with their mothers and fathers. Daughters reported

independence and peer issues as the most conflictual topics with their mothers and the

topics of material possessions and independence with their fathers. Sons reported that the

topics of independence and school generated the most conflict with both mothers and

fathers. The authors did not expand on these topics or explain the types of responses that

fit into these categories.

Monetemayor (1983) reviewed four studies that looked at parent-adolescent

conflict among 18- to 21-year-old participants. Each study indicated that parent-child

conflict decreased after the age of 18, but low levels of conflict remained. Montemayor

(1983) posited two reasons for this phenomenon:

> One is that conflict declines when an individual acquires full adult status and
> becomes a peer of his parents. The other is that the lessened conflict is the result of
> a decrease in interaction time which follows the move away from home that often
> takes place around the age of 18. (p. 89)

These explanations may continue to be valid, but the age of accomplishing these tasks

has been extended to the mid-twenties (Arnett, 2000). Late adolescents are not being

given adult status because they continue to be dependent on their parents over longer

periods of time (Arnett, 2000). It is apparent that conflict, although at lower frequencies,

continues to be a part of parent-child relationships in later adolescence (Montemayor,

1983; Renk et al., 2006).

Parents, children, and interactive technology. The internet is associated with

increases in both communication and distance, and cell phones may have a similar

relationship (Subrahmanyam & Smahel, 2011). With the development of new

technology, parents of adolescents have acknowledged that there is some interference with family life and face-to-face interaction (Subrahmanyam & Smahel, 2011). Parents and adolescents perceive different purposes for technology. A pilot study of 13- and 14-year-old students indicated that adolescents cited different reasons for cell phone use than their parents (Cooper, 2009). Parents used cell phones for coordination with their teen. Teens reported that they preferred texting when communicating with peers and phone calls were reserved for family. These different perceptions of the purposes of cell phones influenced parent-adolescent conflict.

Weisskirch (2009) conducted a study with 196 parent-adolescent dyads concerning parenting and cell phone use. Adolescents and parents completed surveys separately. It was indicated that parents who called adolescents more frequently reported more family disharmony. The phone calls may be a function of the family disharmony rather than the cause, the direction of effect is unknown. Using the same data, Weisskirch (2010) identified that parent-adolescent conflict arose when parents initiated cell phone calls when they were upset, monitoring, or tracking school work.

Conflict can also arise when adolescents use the internet for different purposes. Mesch (2006b) had a sample of 396 Israeli adolescents (13- to 18-year-olds) complete structured interviews concerning family internet use. Findings showed that adolescents' perceived parent-child conflict occurring when they used the internet for social purposes (e.g., communication with friends, playing online games, and participation in discussion groups). There was no association between perceived parent-adolescent conflicts when adolescents were using the internet for school related purposes.

There is also some evidence that existing parental-adolescent conflict may influence how adolescents use the internet. Wolak, Mitchell, and Finkelhor (2003) looked at perceptions of adolescents who formed close online relationships. A sample of 10- to 17-year-olds ($N = 210$) were interviewed concerning online experiences during the last year. Adolescent girls that perceived significant conflict with their parents were more likely than other girls to form close online relationships. Adolescent boys were more likely to have close online relationships when the perceived parent-child communication was low.

Cooper (2009) indicated that adolescents perceived that they had more expertise with technology than their parents. Adolescent participants suggested that if parents cannot adapt to new technology then the dynamics of staying in touch with parents will change. Adolescents were implying that the perceived digital generation gap could influence how they communicate with their parents. There is also some emerging evidence that the perceived digital generation gap may be associated with conflict over family internet use. A representative sample of adolescent (12- to 17-year-olds) internet users and their parents ($N = 1508$) in the United States was used to look at intergenerational conflicts over internet use (Mesch, 2006a). Surveys were the primary mode of data collection. The most important finding was that 40% of the parents in the sample indicated that there were conflicts over internet use between themselves and their adolescents. If adolescents were considered the experts of new technologies in the home there was a higher likelihood for parent-adolescent conflict. More intergenerational conflicts occurred when parents expressed concern about the potential negative effects of

internet use. Additionally, it was identified that there was less parent-adolescent conflict when parents were beginners with technology. This may be because parents are relying on their adolescent for guidance, training, and support while learning about new technology.

Few studies are available concerning parent-late adolescent conflict and technology. One of the aforementioned studies investigated the perceptions of late adolescents' communication with parents over electronic mediums (Gentzler et al., 2011). Late adolescents perceived closeness in their relationships when communicating with their parents over the phone. However, late adolescent-parent communication over social networking was associated with perceptions of increased parent-child conflict. It appears that there may be a relationship between perceived parent-child conflict and technology in late adolescence. More research is needed to understand this relationship.

The current literature indicates that technology is potentially a day-to-day source of conflict between parents and adolescents. These conflicts are typically centered on different perceptions regarding the purpose of technology. It also appears that differences in the knowledge and expertise of parents and adolescents influences the prevalence of conflict in their relationships. Subrahmanyam and Greenfield (2008) indicated that little research has been done looking at parent-child conflict and interactive technology and that additional research is needed to fill this gap.

**Parental-Knowledge of
Children's Behavior**

Parental-knowledge can be defined as a parent's awareness of their child's

behavior when they are apart (Kerr, Stattin, & Burk, 2010). Traditionally, research has

focused on the practice of parental-monitoring rather than parental-knowledge. Parental-

monitoring refers to parent's surveillance of their children's behavior and alone, it does

not lead to parental-knowledge. Knowledge comes from child disclosure to parents.

Monitoring alone allows children to hide behavioral information from their parents.

Parents attempt to protect and monitor their adolescents using different

techniques. Some parents employ direct approaches, such as control, and others use less

obtrusive ways such as open parent-child communication (McElhaney, Porter,

Thompson, & Allen, 2008). Parents and adolescents have different perceptions of what

constitutes parental influence (McElhaney et al., 2008). One study identified that

adolescents reported high parental influence when they also perceived warm and

supportive relationships with their parents. Parent reports of parental influence were

most connected with psychological control and limited adolescent autonomy.

Parental-monitoring has traditionally been defined as a parent's surveillance and

tracking of their children's behavior (Stattin & Kerr, 2000), and has been associated with

positive outcomes in adolescence (Padilla-Walker et al., 2008; Stattin & Kerr, 2000).

When evaluating parental-monitoring, researchers commonly ask about parental-

knowledge, but do not evaluate the source of parental-knowledge. Stattin and Kerr

(2000) used a cross-sectional design to investigate the sources of parental-knowledge

with a sample of 703 adolescents (14-year-olds) and their parents in Sweden. Both

parents and adolescents indicated that parental-knowledge comes from parents'

surveillance efforts (parents asking their adolescents or friends for information), parental-

control (rules and restrictions), and child disclosure. A follow-up 2-year longitudinal study with 983 adolescents (seventh- and eighth-grade students) and their parents was used to verify sources of parental-knowledge (Kerr et al., 2010). Parental-knowledge was represented by the amount of information that was disclosed by adolescents, not by the knowledge acquired by parental surveillance or control efforts. The authors concluded that future research on parental-monitoring needs to be re-conceptualized as investigations of parental-knowledge through youth reports.

Parental-knowledge of behavior in late adolescence. Late adolescence is typically discussed as a time period where adolescents become semi-autonomous (Arnett, 2000). This means that late adolescents take on some responsibilities of independence, but continue to rely on their parents and other adults. For example, late adolescents may leave home, but maintain parental financial dependence or they may continue to live at home and have fewer parental rules. Arnett (2000) argued that parental-monitoring or surveillance decreases during this time period. This shift creates opportunities for late adolescents to become more autonomous and to increase their exploration. With lower supervision/monitoring it is not surprising that late adolescents experience the highest rates of several reckless behaviors (e.g., drug use, driving under the influence, binge drinking) when compared to other developmental time periods (Arnett, 1992). However, other factors such as age and access need to be considered. For example, late adolescents can legally access alcohol at age 21 in the United States.

Padilla-Walker and colleagues (2008) indicated that parent-child relationships continue to be important as children grow into adulthood, especially during times of

transition. Late adolescence can be considered a time period of transition. Late adolescents have the highest rates of residency change when compared to other developmental groups (Arnett, 2000). Because late adolescence is a time of exploration, late adolescents also "try on" different jobs, service opportunities, and relationships. Also, Arnett (2004) indicated that late adolescents are more open with their parents when they move out. The decreases in parental-monitoring and more openness (parental-knowledge) may be evidence of individuation negotiation in the parent-child relationship. Research is limited concerning parental-knowledge during late adolescence.

One study specifically investigated the relationship between perceived parental-knowledge and late adolescent risk behaviors (Padilla-Walker et al., 2008). Two-hundred undergraduate students (ages 18-25) and both their parents ($N = 600$) completed online surveys. Late adolescents reported their perceptions of their parent's knowledge about their behaviors and parents also self-reported their own perceived knowledge of their late adolescent's behaviors. The risk behaviors included alcohol consumption, drug use, and number of sexual partners. Differences in late adolescents' perceptions and parent perceptions of parental-knowledge were identified. Parents reported higher levels of parental-knowledge when compared to late adolescent children's reports $F(1,194) = 21.63, p < .001$; however, despite the fact that parents reported higher levels of parental-knowledge their greater knowledge was less effective in predicting late adolescent drinking, drug use, and sexual behavior than were the late adolescent perceptions of parental-knowledge. In other words, it was the adolescent's perceptions of their parent's knowledge that best predicted their risky behavior and not the parent's perceptions. This

phenomenon was most evident when comparing perceived paternal-knowledge with that of their adolescent's perceptions. Adolescents' reports were three times as effective in predicting drinking behavior, five times as effective in predicting drug use, and nearly six times as effective in predicting the adolescent's participation in sexual behavior when compared to fathers' perceptions of their own parental-knowledge. Perceived maternal-knowledge and the adolescent's perceived knowledge were more consistent. The majority of the sample (90%) lived away from their parents' residences. The study did not investigate differences between perceptions of parental-knowledge on late adolescents' living arrangements. However, the study did show that late adolescent perceptions of parental-knowledge were more indicative of their behavioral outcomes than were paternal perceptions.

Sessa (2005) investigated the perceptions of parental-knowledge on substance use in residential and commuter first-year male college students. The sample included 50 residential and 57 commuter late adolescents. Participants filled out a questionnaire concerning their perceptions of their parent-child relationship, alcohol use, and marijuana use. Results highlighted differences between residential and commuter college students. Residential college students perceived more parental-monitoring of their behavior than their commuting counterparts. Also, commuter students drank less alcohol and used less marijuana when they perceived that their parents were monitoring or supervising their behaviors. This study provides some evidence that perceived parental-monitoring may have a different relationship with behaviors depending on the living situation of the late-adolescent. The small, all male sample is an apparent limitation in this study. Additional

research is needed to support findings from both of these studies in order to further understand the influence of perceived parental-knowledge in late adolescence.

Parental-knowledge and interactive technology use. Parents control their adolescents' media use through restriction (Fisher, Leve, O'leary, & Leve, 2003), rule setting (Roberts, Foehr, & Rideout, 2005), and actively participating in media with their children (Schooler, Kim, & Sorsoli, 2006). Parents and adolescents have different perceptions of these monitoring techniques. One study looked at adolescents' ($N = 749$ parent-adolescent dyads) perceptions of parental internet rules (Wang, Bianchi, & Raley, 2005). Parents consistently reported that they did have internet rules and their children reported that they had no rules for internet use.

Parents attempt to monitor adolescents' interactive technology use because they are concerned about the content that is available (Swift & Taylor, 2003). Yardi and Bruckman (2011) conducted interviews with 16 parents concerning the challenges of monitoring adolescents' technology use. Parents indicated that they would like more transparency in their adolescents' internet and cell phone use. Parents reported that this was challenging because of their own unfamiliarity with technology, hinting at the challenges of a perceived digital generation gap.

Research on perceptions of parental-monitoring of adolescent technology use is emerging (Blair & Fletcher, 2011; Fisher et al., 2003; Lenhart, 2010b; Rogers, Taylor, Cunning, Jones, & Taylor, 2006). As previously mentioned, some parents attempt to regulate use by setting restrictions (Fisher et al., 2003). One study investigated adolescent ($N = 200$) perceptions of parental restrictions on their technology use (Rogers

et al., 2006). It was indicated that fewer than 15% of the sample reported having parental restrictions on internet, instant-messaging, computer, or cell phone use. In another study parents were asked about their perceptions of how they monitored their children's internet use (Swift & Taylor, 2003). Parents from 1,081 Canadian households were included in this study. Over 53% of parents reported that they were closely supervising their children's internet use. Another 30% said they provided some supervision, meaning that they were ensuring that people in the household had equal time on the internet and their children were getting their homework done first. Despite the fact that 83% of these parents reported some level of supervision, they also reported very little knowledge concerning what their children were actually doing online.

As interactive technology has become accessible on small personal devices, monitoring has become a larger challenge. Despite these challenges, parents have found ways to monitor their adolescents' cell phone use (Blair & Fletcher, 2011; Lenhart, 2010b). A qualitative study indicated that parents did report occasionally checking the text-messages or voice mails on their adolescents' phones (Blair & Fletcher, 2011). These parents indicated that this was not a consistent practice. Parents continue to give their children cell phones primarily for reasons of safety and monitoring (Blair & Fletcher, 2011). Parents use cell phones to check in with their adolescents when they are not together. Cell phones can be conceptualized as tools that can enhance parental surveillance.

These qualitative findings in parental cell phone monitoring have been supported with quantitative data. A nationally representative sample of 800 adolescents (12- to 18-

year-olds) and their parents completed a survey regarding adolescent cell phone use (Lenhart, 2010b). Sixty-four percent of parents reported that they looked at the contents of their child's phone and 62% stated that they have taken their child's phone away as a punishment. Approximately half of the parents in the sample reported that they limited the number of minutes that their child spent talking on the phone and the number of times they could use their phone in a day.

The majority of studies reviewed have focused on parental rules or content restrictions for adolescent technology use. Parental-knowledge appears to be low concerning what adolescents are doing online and on their cell phones. The literature typically focused on the adolescent developmental time period. Parents may not be as concerned with the content or frequency of technology use when their children become late adolescents. However, parents may use interactive technology as a way of increasing parental-knowledge (e.g., looking at their Facebook page or a friend's page, maintaining contact through texting). Increased parental-knowledge through interactive technologies may be a way of decreasing risky behaviors in late adolescence. A perceived digital generation gap could influence a parent's ability to engage their young adult children using interactive technology.

Summary

As technology has developed at a rapid pace, late adolescents have become experts in using and adapting to new interactive technologies (Facer et al., 2001). The literature indicates that parents experience more difficulty in adapting to new technology

and learning about existing technology (Livingstone, 2003; Oksman & Turtianinen, 2004). This difference in technological expertise between parents and their young adult children provides some evidence of a perceived digital generation gap. This perceived digital generation gap has been alluded to in parent and adolescent discussions of perceptions, but has not been measured quantitatively.

Many of the typical tasks of adolescence now appear to continue beyond the age of 18 (Arnett, 2000). This late adolescent time period involves relationship negotiation or individuation between parents and their children (Grotevant & Cooper, 1986). It is possible that having a perceived difference in technological knowledge or a perceived digital generation gap may influence how individuation is negotiated between parents and late adolescents. The perceived gap may specifically influence perceived parent-child relationship characteristics.

Parent-child time decreases as children get older. The majority of the literature on the topic of parent-adolescent time has focused on the quantity of time instead of the quality of time spent together. Some research has shown that the quantity of interaction may decrease between parents and adolescents, but the quality of interaction does not (Larson et al., 1996). Technology has been portrayed as a hindrance to quality time between parents and their children. The majority of the studies on the topic have focused on non-interactive forms of technology. Some studies have shown that parents and their children can experience quality time using interactive technology (Gentzler et al., 2011; Weisskirch, 2010). It may be that parents and late adolescents can use interactive technology as a medium to increase their quality time spent together. This largely rests

on parents' ability or the late adolescents' perception of their parents' ability to use interactive technology.

Parent-child conflict has been found to decrease as adolescents grow into adulthood, but a low level of conflict remains (Smetana & Gaines, 1999). It has been suggested that conflict may decrease because adolescents acquire adult status or because parent-child interaction decreases when an adolescent moves away (Montemayor, 1983). Adult status is not being achieved as early as previous generations and adolescents are remaining dependent on parents for longer periods of time (Arnett, 2000). A few studies have indicated that some parent-child conflict does continue into late adolescence (Montemayor, 1983; Renk et al., 2006). Research on technology and parent-child conflict is limited. A few studies indicated that more parent-child conflict is experienced when the child is thought of as the technology expert. A perceived digital generation gap with interactive technology may result in more conflict between parents and late adolescents.

Parental-knowledge goes beyond observing or monitoring children's behavior (Kerr et al., 2010). Parental-knowledge comes from self-reports from children through parent-child communication. Parental-knowledge and perceptions of parental-knowledge in late adolescence have been associated with lower rates of risky behavior (Padilla-Walker et al., 2008; Sessa, 2005). Newer technologies provide innovative ways for parents and their children to communicate. Communication and child disclosure may be more frequent with interactive technologies. When late adolescents' perceive that parents

have competence with these technologies they may also perceive higher levels of parental-knowledge.

Research Questions

Based on the review of the literature, the proposed framework, and an understanding that the study was to be conducted with a westernized culture the following research questions were developed:

1. Does the perceived amount of parents' interactive technology knowledge differ from late adolescents perceptions of their own technology knowledge?

2. Are there differences in the perception of the amount of quality time spent between late adolescents and their parents when there are perceived differences in interactive technology knowledge?

3. Are there differences in the amount of parent-child conflict between late adolescents and their parents when there are perceived differences in interactive technology knowledge?

4. Are there differences in late adolescents' perceptions of parental-knowledge when there are perceived differences in interactive technology knowledge?

CHAPTER III

METHODS

This chapter introduces the research design used to answer the research questions. The sample characteristics are presented. The procedures for recruiting the sample and completing this project are explained in detail. Additionally, pre-existing questionnaires and questionnaires developed for this study are introduced and explained.

Research Design

A cross-sectional research design was used to collect data. Online surveys containing multiple measures were administered at one point in time. Students enrolled in nine courses at Utah State University were recruited for participation. Students' parents were also invited to complete surveys to identify congruence between parent reports and late adolescent perceptions of a perceived digital generation gap.

Sample

A convenient sample was used in this study. College students from nine courses at Utah State University were invited to participate in this study for assignment credit or extra credit. The majority of courses were lower division ($n = 6$), met general education requirements ($n = 7$), and were offered via face-to-face instruction ($n = 8$). Enrollment in these courses was 1,197 students and 805 students completed the survey. The overall response rate, after accounting for students in multiple courses, was 71.4% (see Table 1).

Table 1

Course Information and Survey Completion

Course	Instruction modality	Course level	Incentive	Enrollment	Actual completion	Response rate
1	Face-to-face	2000 level	Extra credit	111	84	75.6%
2	Face-to-face	3000 level	Extra credit	72	45	62.5%
3	Online	2000 level	Extra credit	73	37	50.7%
4	Face-to-face	1000 level	Extra credit	167	136	81.4%
5	Face-to-face	1000 level	Extra credit	245	128	52.2%
6	Face-to-face	1000 level	Assignment credit	148	106	76.6%
7	Face-to-face	3000 level	Assignment credit	80	52	65.0%
8	Face-to-face	1000 level	Extra credit	111	76	68.5%
9	Face-to-face	2000 level	Extra credit	190	141	74.2%
Students enrolled in more than one class						
			Two classes	60		
			Three classes	5		
			Totals	1,127	805	71.4%

This is an impressive response rate compared to the average rate of 34.6% reported in a meta-analysis of 56 web and internet based surveys (Cook, Heath, & Thompson, 2000).

Participant age ranged from 18 to 48. This study targeted the perceptions of late adolescents—only participants between the ages of 18-25 were included in the final analyses. Single marital status was also required for inclusion in the sample. Data from students who were married or cohabiting was not included in the analysis. Of the total sample, 201 participants did not meet the inclusion criteria.

Participants who met the age and marital status criteria included 604 late

adolescents who were predominately female ($n = 503$). The sample was approximately 93% Caucasian. The majority of participants (72%) were between the ages of 18 and 20. Approximately 85% of the participants reported that they were living away from their parents in single student housing. A clear majority indicated that they were raised in homes with two biological parents (82.3%) and on average were living 250 miles ($SD = 90$) away from the high school they graduated from. Detailed sample characteristics are summarized in Table 2.

Procedures

The instructors of nine social science courses at Utah State University agreed to allow their students to participate in this study. Students were given extra credit or assignment credit as incentive to increase response rates. The questionnaire was designed to be administered online and was hosted on a secure website. Prior to administering the survey a researcher visited each class (with the exception of the online class) to briefly explain the study and illustrate to the students how to access the online survey. Each instructor posted an information sheet on their online course management page. The information sheet included a brief description of the project, a link to the secure website, a password, and specific incentive information for each course (see Appendix F). Students were then given between seven and nine days to complete the questionnaire. Instructors were also asked by the researcher to post a reminder on their online course management page three days before the survey closed that included the link, password, and deadline.

Table 2

Sample Characteristics

Characteristic	Males		Females	
	n	%	*n*	%
Age				
18	15	14.9	117	23.3
19	15	14.9	175	34.8
20	5	5.0	106	21.1
21	22	21.8	53	10.5
22	21	20.8	28	5.6
23	15	14.9	11	2.2
24	7	6.9	7	1.4
25	1	1.0	6	1.2
Ethnicity				
White	93	92.1	471	94.2
Asian	3	3.0	8	1.6
African American	2	2.0	4	0.8
Hispanic/Latino	1	1.0	14	2.8
Native American	1	1.0	1	0.2
Pacific Islander	1	1.0	0	0
Other	0	0	2	0.4
Current living situation				
Off-campus student housing	54	53.5	277	55.1
On-campus student housing	27	26.7	159	31.6
With parents	20	19.8	67	13.3
Parenting configuration				
Both biological parents	83	82.2	414	82.3
Single mother	11	10.9	36	7.2
Biological mother and stepfather	5	5.0	33	6.6
Biological father and stepmother	1	1.0	8	1.6
Single father	1	1.0	6	1.2
Adoptive parents	0	0	3	0.6
Extended family	0	0	3	0.6

Note. Three female participants did not answer the question concerning ethnicity.

The research design and procedures were approved by Utah State University's Institutional Review Board (see Appendix D). The first page of the questionnaire included a formal letter of information (see Appendix E) and students' consent determined access to the questionnaire. Participants were asked to record their student identification number and instructor name in order to reward their participation. After participation was documented, student identification numbers and instructor names were removed from the data to protect participant confidentiality. Surveys took students approximately 20-30 minutes to complete.

To identify congruence between late adolescent perceptions and parent perceptions of a perceived digital generation gap, students were also encouraged to have a parent(s) complete an online survey. Students whose parents ($n = 555$) completed the survey were awarded additional assignment credit or extra credit. Similar to the students' online survey, their parents had the opportunity to read the formal letter of information (see Appendix E) and provide consent before completing the survey. Parents reported their college student's identification number in order to award credit and match data. Parent surveys were also completed in approximately 20-30 minutes.

Students who were enrolled in more than one course only completed the online survey once. Students in this circumstance emailed the researcher their student identification number, participation was verified, and credit for completion was awarded for each class in which the student was enrolled. Student and parent data were matched using the student identification number. When data collection concluded instructors were

sent comprehensive lists of the students who completed the surveys with the total points students earned.

Measures

Demographics

To identify sample characteristics, ten questions were included in the final questionnaire. The demographic questions asked for participant age, ethnicity, marital status, living situation (e.g., on campus), distance from home, and family formation (e.g., stepfamily; see Appendix B). Additional questions were asked to determine late adolescents' time spent with interactive technology (see Appendix B).

Perceived Interactive Technology Knowledge

Livingstone (2009) used the term "media literacy" in her work to describe a person's ability to access, evaluate (a person's ability to search content and assess for reliability), create, and communicate with media. These guidelines for media literacy were used to develop questions to evaluate perceived interactive technology knowledge. The questions include four major interactive technology sources including cell phones, email, social networking, and video chat (e.g., Skype). Comprehensive lists concerning methods or features used to access, evaluate, create, and communicate with each of the technology sources were developed using (a) instruction and "how to" pages from websites (e.g., www.skype.com); (b) existing research concerning the percentage of people who use the different features of the technology sources (see Lenhart et al., 2010); and (c) through collaboration with colleagues, peers, and family members who were

between the ages of 18-25 years old. Comprehensive lists were presented to 18-25 year

olds (colleagues, peers, and family members) to have them indicate the percentage of

people in general that could utilize each of the specific features or methods within the

four major interactive technology sources. To develop the final questionnaire, a cutoff

rate of 70% was used to differentiate between features or methods of use that require

more expertise. Secondly, where this study is specifically focused on interaction,

features that do not contribute to interaction were excluded (e.g., using the alarm feature

on a cell phone). Eighty-four items were used to evaluate perceived knowledge of

interactive technology for late adolescents and their perceptions of their parents'

technological knowledge (see Appendix B).

To assess the reliability of late adolescents' perceptions of their parents'

technology knowledge, parents completed 28 questions about their own perceived

technological knowledge and expertise (see Appendix C). Table 12 (see Appendix A)

includes complete information concerning correlations between late adolescents'

perceptions and parent reports. Correlations between parent reports and late adolescents'

perceptions of parent interactive technology ranged from r (150) = -.18 to r (150) = .00

for mothers and r (118) = -.12 to r (102) = .19 for fathers. In seven (out of 12

comparisons) students reported higher means of perceived parental technology

knowledge when compared to means of actual parent report. For example, late

adolescents reported higher perceived maternal knowledge (M = 5.19, SD = 8.66) and

perceived paternal knowledge (M = 5.36, SD = 10.65) about video chat when compared

to mother (M = 3.65, SD = 7.57) and father (M = 5.36, SD = 8.97) self-perceptions of

their own video chat knowledge. The largest mean difference in the other direction was for mothers' knowledge about social networking. Mothers' ($M = 4.04$, $SD = 4.15$) reported an 11.9% higher mean when compared to late adolescents' ($M = 3.61$, $SD = 4.15$) perceptions of maternal social networking knowledge. Comparisons show that late adolescents did not grossly overestimate parents' lack of knowledge. In general, late adolescents perceived that their parents knew more about interactive technology than parents' self-reports of their own knowledge.

Perceived Parent-Child Quality Time

Fallon and Bowles (1997) conceptualized parent-child quality time as the amount of parent-child time spent within the last week when the child felt like they were together. Being "together" was described further as feeling free to talk about things that are important to the child, safety to ask questions, and the ability to discuss things that a child would not want any other person to know (Fallon & Bowles, 1997, p. 32). One item was used to assess late adolescent perceptions of parent-child quality time. The question asked late-adolescents to reflect on the past week and indicate how much of the total amount of time they spent with their mother and their father that they felt close and together. "Time spent" was defined as interaction between the parent and the late adolescent (e.g., online, over the phone, face-to-face).

Perceived Parent-Child Conflict

A revised version of the *Issues Checklist* (abridged) was used to assess parent-child conflict (Robin & Foster, 2002). The measure consists of 44 discussion topics, and

asked the participant to state whether the topic had been discussed in the last four weeks, and if the topic had been discussed the participant ranks their feeling during the discussion on a scale of calm (1) to angry (5). The *Issues Checklist* generates a conflict intensity score (Robin & Foster, 2002). This is calculated by summing the total number of items that an adolescent reported discussing with their parents. Then intensity ratings in each of the discussed items were also summed. Finally, the intensity ratings were divided by the total number of items.

Discriminative validity studies have indicated that the *Issues Checklist* successfully discriminates between distressed and non-distressed families (Robin & Foster, 1989). Point-biserial correlations for adolescent responses ranged from $r_{pb} = .15$ to $r_{pb} = .44$. Significant differences between distressed and non-distressed families were identified in adolescent reports of the quantity of conflict with their mother $t(162) = 1.88$, $p < .05$, the intensity of conflict with their mother $t(162) = 6.20$, $p < .05$, the quantity of conflict with their father $t(50) = 1.71$, $p < .05$, and the intensity of conflict with their adolescent $t(50) = 2.80$, $p < .05$.

Test-retest procedures have been conducted with both distressed and non-distressed parent-adolescent dyads using the *Issues Checklist* (with small samples sizes) (Robin & Foster, 1989). Adolescent's responses in distressed dyads were correlated on a 6- to 8-week interval for quantity of conflict with mother $r(8) = .49$, $p = .15$, intensity of conflict with mother $r(8) = .37$, $p = .15$, quantity of conflict with father $r(6) = .87$, $p < .01$, and intensity of conflict with father $r(6) = .39$, $p = .17$. Adolescent's responses in non-distressed dyads were correlated on a one to two week interval for quantity of

conflict with mother r (31) = .49, p < .01, intensity of conflict with mother r (31) = .47, p

< .01, quantity of conflict with father r (31) = .60, p < .001, and intensity of conflict with

father r (31) = .72, p < .001.

The *Issues Checklist* was originally developed for use with adolescents living in

their home environment (Robin & Foster, 1989). To make the measure more applicable

for use with late-adolescents, a group of college students (family, peers, and colleagues

ages 18-25) collaborated to determine the relevancy of each item and generate items that

would be more pertinent to late adolescent-parent communication. Twelve items were

removed from the Robin and Foster (1989) measure because they focused on parent-child

interactions based on an in-home setting. Additionally, thirteen items were revised in

order to update the measure (e.g., changed "buying records" to "buying music") and

make items more relevant to late adolescents (e.g., changing "bedtime" to "sleeping

habits"). A summary of the revisions made to the Issues Checklist can be found in Table

13 (see Appendix A). The revised measure included 43 questions and is available in

Appendix B.

Perceived Parental-Knowledge of Behavior

Parental-knowledge of adolescent behavior has commonly been measured using

five questions concerning parents' knowledge about adolescents' behavior: at night, after

school, with money, during free time, and with friends (Barber, Olsen, & Shagle, 1994;

Darling, Cumsille, Caldwell, & Dowdy, 2006; Stattin & Kerr, 2000). These categories of

questions have also been used to measure perceived parental-knowledge with late

adolescents (Padilla-Walker et al., 2008). This study included additional questions about

parental-knowledge concerning drug use, alcohol consumption, and sexual behavior.

Cronbach's alphas for late adolescents' reports of paternal- (.81) and maternal-knowledge

(.76) indicated adequate reliability of scores in previous research (Padilla-Walker et al.,

2008). Padilla-Walker and colleagues (2008) asked both late adolescents and their

parents to complete the measure. Due to the exploratory nature of this study and the

research questions focusing on late adolescent perceptions a variation of the questions

was used to: (a) identify late adolescent perceptions of what their parents "think they

know," and (b) late adolescent perceptions of what their parents "really know" about each

subject. Responses from the second part of this question were used in the analysis

because the fourth research question is interested in late adolescents' perceptions of what

they think their parents really know about their behavior. Participants were asked to

complete the questions for both of their parents. One question concerning parental-

knowledge about activities after school was removed because this question is answered

with parental-knowledge about free time with late adolescents. Two additional questions

were added to assess parental-knowledge about time spent with technology/media and

what late adolescents are doing online. This final measure consisted of sixteen questions

(Appendix B).

CHAPTER IV

RESULTS

This study focused on documenting a perceived digital generation gap between late adolescents' knowledge of interactive technology and their perceptions of their parent's interactive technology knowledge. Secondly, the study attempted to understand the influence of this perceived digital generation gap on specific parent-child relationship characteristics as perceived by late adolescents. This chapter presents the statistical results for the four research questions. Data were analyzed separately for perceptions of mothers' and perceptions of fathers' interactive technology knowledge to understand the unique differences. All data analyses were conducted with SPSS version 20.

Preliminary Analyses

Perceived Interactive Technology Knowledge

Because items included in the perceived knowledge of interactive technology questionnaire were developed from Livingstone's (2009) description of media literacy, several data-based decisions specific to these items were required to meet research objectives. Recall that the online questionnaire contained three sections (participant, perceived mother's knowledge, perceived father's knowledge), each containing 28 items that addressed the participant's, and perceptions of both their mothers' and fathers' knowledge about cell phones (7 items), email (4 items), social networking (7 items), and

video chat (10 items). The 28 items that assessed late adolescents' own knowledge were subjected to an exploratory factor analysis.

A factor analysis identified six independent constructs that accounted for 74% of the variance in the correlation matrix. The first factor consisted of seven items with factor loadings ranging from .89 to .93 (see Table 3). These items each represented different features of video chat (i.e., answering a call, making a call, setting an online status, adding contacts, downloading Skype, adding a picture, and denying a contact). These items were summed to form a *video chat* scale. The second factor included five items with factor loadings that ranged from .59 to .81. Each of these items provided information about features specific to cell phones (i.e., recording video, video messaging, taking a picture, picture messaging, and setting up a voicemail) and they were summed to develop a *cell phone* scale. The third factor was composed of three items that provided information about social networking features (i.e., privacy settings, using chat features, and blocking contacts). Factor loadings for this factor ranged from .70 to .81. The items in this factor represented features used in social networking in general and were summed to form the *general social networking* scale. The fourth factor included two items that were specific to the social networking service Twitter. The two items included "following someone on Twitter" and "sending a Tweet." The factor loadings were .89 and .90 respectively, and the summed items are called the *Twitter* scale. The fifth and sixth factors both contained questions concerning email. The fifth factor included two items (i.e., saving a contact and saving an email) with factor loadings of .83 and .84. The

Table 3

Factor Loadings of Late Adolescents' Interactive Technology Knowledge

			Factors			
Variable	I	II	III	IV	V	VI
I. Video chat						
Answering a call	.93	.13	.17	.04	.01	.01
Making a call	.93	.15	.19	.04	.01	.03
Set online status	.93	.10	.15	.09	.04	.01
Adding contacts	.91	.11	.17	.13	.02	.08
Download Skype	.90	.14	.17	.08	-.01	.07
Add/change picture	.90	.10	.15	.17	.05	.10
Deny a new contact	.90	.08	.15	.17	.01	.03
II. Cell phones						
Record a video	.16	.80	.15	.02	.13	.05
Video message	.19	.77	.04	.11	-.02	.19
Take a picture	.04	.70	.26	-.04	.32	-.12
Picture message	.10	.66	.31	-.02	.43	-.16
Set up voicemail	.16	.59	.17	.16	.16	.23
III. General social networking						
Managing privacy settings	.20	.24	.81	-.02	.08	-.03
Using chat features	.18	.25	.72	.13	.07	.15
Blocking a person	.27	.22	.70	.03	.22	.20
IV. Twitter						
Following someone on Twitter	.26	.04	.17	.90	.02	.01
Sending a Tweet	.29	.07	.14	.90	.04	.01
V. Basic email						
Saving a contact	.03	.24	.12	.07	.84	.18
Saving an email	.01	.17	.16	.01	.83	.29
VI. Advanced email						
Instant messaging feature	.12	.10	.13	.05	.23	.80
Identifying spam emails	.12	.07	.17	.05	.40	.70
Eigenvalues	10.61	3.85	1.97	1.63	1.51	1.05
Percent of variance accounted for	37.91	13.76	7.05	5.81	5.41	3.75

items in the fifth factor represented more basic emailing skills and were summed to form

the *basic email* scale. The sixth factor also included two items (i.e., instant messaging

feature and identifying spam mail) with factor loadings .80 to .69. These items require

additional skill and were summed to form the *advanced email* scale.

In accord with results from the factor analysis, late adolescent responses for each

factor were summed to create six constructs, each associated with different aspects of

technology. Pearson correlations and reliability coefficients were calculated on the six

sub-scales. As shown in Table 4, the Pearson *r* coefficients were all positive and

illustrated that knowledge in one area of technology is positively related with knowledge

about other interactive technologies. For example, knowledge about video chat was most

strongly related with knowledge about general social networking ($r = .44$). Conceptually,

this makes sense because social networking and video chat are both relatively new

technologies and both require advanced skill when compared to email. Twitter and basic

email had a positive, but small correlation ($r = .11$). Twitter is a specified social

networking service that entails much more skill than email. Cell phone and video chat

were also strongly related ($r = .51$). This relation also makes sense because smart phone

technology allows for access to video chat. Cronbach's alpha coefficients for the six

scales ranged from .72 to .98, indicating adequate to strong internal consistency across

scales.

Reliability information was also calculated for perceived technology knowledge

for mothers and fathers. First, perception scores were summed separately for perceptions

of mother and father interactive technology knowledge for each of the six newly

Table 4

Reliability Estimates and Correlations of Interactive Technology Factors

Variable	1	2	3	4	5	6
1 Video chat		**.98**	.37***	.44***	.40***	.15**	.32***
2 Cell phones			**.85**	.51***	.24***	.37***	.34***
3 General social networking				**.84**	.31***	.27***	.42***
4 Twitter					**.96**	.11*	.30***
5 Basic email						**.85**	.50***
6 Advanced email							**.72**

Note. Off diagonal are Pearson *r* coefficients. On diagonal are Cronbach's alpha coefficients. **p < .05, **p < .01, *** p < .001.

developed scales. Alpha coefficients for perceptions of mothers' knowledge were as follows: .96 (video chat), .92 (cell phones), .88 (general social networking), .96 (Twitter), .94 (basic email), and .73 (advanced email). Internal consistency estimates for the perceptions of father data were: .98 (video chat), .97 (cell phones), .96 (general social networking), .99 (Twitter), .97 (basic email), and .78 (advanced email).

Perceived Parent-Child Characteristics

Conflict intensity scores were calculated separately for perceived conflict with mother and perceived conflict with father. Cronbach's alpha coefficients were calculated to examine reliability. The alpha coefficients were .94 for perceived conflict with mother

and .96 for perceived conflict with father.

Perceived parental-knowledge was measured with eight items for both mothers (α = .91) and fathers (α = .95). The questions used to measure perceived parental-knowledge of child's behavior have traditionally been averaged together and higher scores have represented more parental-knowledge (see Padilla-Walker et al., 2008). The eight questions (separately for perceptions of mother and father) were subjected to an exploratory factor analysis. Perceived fathers' knowledge yielded two factors. The first factor included six items with factor loadings ranging from .71 to .84 and accounted for 59.34% of the variance. The second factor included the two items drug/alcohol use (.64) and sexual behaviors (.68) accounting for an additional 14.08% of the variance. However, in the factor analysis for perceived mothers' knowledge only one factor (including all eight items) emerged, accounting for 73.89% of the variance. In order to maintain consistency within measures of perceived mother- and father-knowledge of children's behavior, it was decided to use the questions in the traditional way. All eight items were summed and averaged separately for adolescents' perceptions of their mothers' and fathers' parental-knowledge to generate two scores.

Pearson correlation coefficients provided evidence of construct validity for these measures. As was expected, perceived father-knowledge of child behaviors (r = .36, p < .000) and perceived mother-knowledge of child behaviors (r = .38, p < .000) shared a positive relation with perceptions of quality time. Additionally, near-zero correlation coefficients were identified between conflict and quality time for both late adolescents' perceptions of mothers (r = .01, p > .05) and fathers (r = .13, p < .01). A weak negative

relationship was identified between perceived maternal-knowledge and maternal-conflict ($r = -.10$, $p < .05$). Also, a correlation between perceived paternal-knowledge and paternal-conflict indicated a weak positive relationship ($r = .09$, $p < .05$). In sum, these coefficients provide an indication that the measures of conflict, quality time, and parental-knowledge are behaving as expected: no relation between quality time and conflict, no relation between parental-knowledge and conflict, and a moderate positive relation between parental-knowledge and quality time.

Independent t tests were also calculated for males and females and each of the perceived parent-child characteristics. Males and females reported similar rates of maternal knowledge of behaviors t (602) = -.65, $p = .517$. Similar means were also identified for paternal-knowledge of behaviors for male and female participants t (578) =.96, $p = .338$. No significant differences were identified between males and females for paternal conflict t (589) = -.12, $p = .902$ or between male and females reports of paternal quality time t (600) =.10, $p = .924$. A difference was identified between males and females reports of maternal conflict t (602) = -2.59, $p =.010$. This finding is congruent with previous research on maternal conflict. Montemayor (1982) reported that the majority of conflict in parent-adolescent relationships occurs between mothers and daughters. Additionally, mean comparisons indicated a difference between males and females reports of maternal quality time t (601) = -3.24, $p = .001$. This was also consistent with previous research. Tucker, McHale, and Crouter (2003) indicated that females tended to spend more time with their mothers than sons did. These similarities and differences are generally consistent with previous research and, therefore, provide

additional evidence of construct validity for the perceived parent-child characteristics measures.

Descriptive Statistics

As part of the preliminary analyses means, standard deviations, and ranges for each variable in the study were calculated (see Table 5). Also, attention was given to where the participants' learned about the different interactive technologies and the amount of time they spent with each technology the week prior to data collection. The majority of late adolescents reported that they learned about email, cell phones, social networking, and video chat technology through self-learning or peers. However, 52% of late adolescents reported that they learned (at least in part) about email from their parents. Complete statistics about late adolescents learning sources can be found in Table 14 (See Appendix A). Also, Table 15 (see Appendix A) shows that the majority of males and females in the sample reported that they used cell phones, social networking, email, and video chat for at least one hour during the week prior to data collection.

<p style="text-align:center">**Research Question 1**</p>

The first research question examined perceived differences in interactive technology knowledge between parents and their late adolescent children. To answer this question, paired *t* tests were calculated separately for the total sample, for males, and for females. These paired *t* tests were also calculated separately for mothers and fathers within each of the scales of interactive technology knowledge. Cohen's *d* was also calculated for each comparison to provide additional information about mean differences

Table 5

Descriptive Statistics for Study Variables

Variable	Male Late Adolescents				Female Late Adolescents			
	n	Range	*M*	*SD*	*n*	Range	*M*	*SD*
Interactive technology knowledge								
Adolescent self-reported technology knowledge								
Video chat	86	28.00	15.21	11.54	397	28.00	16.61	11.17
Cell phones	101	20.00	17.21	4.27	497	20.00	17.82	3.17
General social networking	83	12.00	9.89	2.95	438	12.00	10.59	2.19
Twitter	99	8.00	2.35	3.01	477	8.00	2.04	2.92
Basic email	81	8.00	7.33	1.55	446	8.00	7.45	1.31
Advanced email	83	8.00	6.21	2.24	440	8.00	5.97	2.16
Perceptions of fathers' technology knowledge								
Video chat	77	28.00	8.92	10.62	417	28.00	8.29	10.48
Cell phones	63	20.00	13.40	7.69	308	20.00	14.05	7.22
General social networking	84	12.00	3.49	4.38	404	12.00	3.62	4.56
Twitter	94	8.00	1.09	2.21	460	8.00	.86	2.09
Basic email	91	8.00	6.27	2.75	449	8.00	6.65	2.53
Advanced email	90	8.00	5.43	2.79	444	8.00	5.51	2.67
Perceptions of mothers' technology knowledge								
Video chat	71	28.00	4.87	8.63	338	28.00	4.36	7.61
Cell phones	69	20.00	10.78	6.85	312	20.00	11.62	6.14
General social networking	88	12.00	3.44	3.47	428	12.00	3.47	3.58
Twitter	96	4.00	.32	1.02	483	8.00	.45	1.46
Basic email	90	8.00	5.73	2.79	429	8.00	6.31	2.47
Advanced email	86	8.00	4.65	2.77	392	8.00	4.61	2.62
Perceived parent-child characteristics								
Perceived quality time with father	101	9.00	2.57	2.40	501	9.00	2.55	2.45
Perceived parent-child conflict with father	95	5.00	.96	.81	496	3.44	.97	.60
Perceived paternal knowledge of adolescent behaviors	97	4.00	2.50	1.22	483	4.00	2.37	1.16
Perceived quality time with mother	101	9.00	3.05	2.29	502	9.00	3.88	2.70
Perceived parent-child conflict with Mother	101	4.79	1.10	.62	503	3.95	1.26	.55
Perceived maternal knowledge of adolescent behaviors	101	3.67	2.84	.86	499	4.00	2.91	.93

across the different technology sources. As shown in Table 6, statistically significant

differences were evident for every comparison, and in each instance the adolescents rated

their knowledge of technology greater than they rated their parents' knowledge. Because

24 paired *t* tests were used to answer this question, alpha inflation was taken into

consideration. The formula for determining the nominal alpha level was used, 1-(1-

.001)^{24}, indicating that the observed alpha level of .001 was in fact .02 after adjusting for

multiple comparisons.

Table 6

Paired Sample t *Tests for Late Adolescents and Perceived Parent Interactive*

Technology Knowledge for Total Sample

Variable	*n*	Late adolescent Mean	*SD*	Parent Mean	*SD*	*t*	*d*
Mother perceived knowledge							
Video chat	344	14.11	11.72	4.54	8.00	16.04***	.954
Cell phones	378	17.74	3.45	11.48	6.25	19.98***	.527
General social networking	444	10.47	2.40	3.70	3.63	34.79***	2.200
Twitter	553	2.04	2.92	.43	1.42	13.24***	.701
Basic email	452	7.50	1.30	6.33	2.53	9.11***	.582
Advanced email	416	5.98	2.21	4.73	2.65	8.45***	.512
Father perceived knowledge							
Video chat	405	15.92	11.43	8.00	10.31	12.46***	.728
Cell phones	366	17.86	3.60	13.94	7.31	10.10***	.680
General social networking	416	10.36	2.48	3.75	4.63	26.14***	1.780
Twitter	529	2.07	2.94	.91	2.14	8.17***	.451
Basic email	475	7.43	1.35	6.62	2.56	6.18***	.396
Advanced email	465	6.04	2.14	5.50	2.70	3.63***	.222

*** $p < .001$.

The largest mean difference in perceived technology knowledge between mothers and late adolescents was in knowledge concerning general social networking. The greatest mean difference between fathers and late adolescent technological knowledge was also observed in general social networking. The second largest mean difference for perceptions of mother and late technology knowledge was in the area of video chat. Likewise, differences in perceptions of father and late adolescent video chat knowledge also represented a large difference between means.

The data in Table 6 also show that both the basic and advanced email scales resulted in the smallest mean differences. In general, the paired *t* tests and Cohen's *d* indicated that mean differences between late adolescent parent perceptions and late adolescent children are greatest for more recent interactive technologies such as video chat and social networking. Among technologies that have been around for a while, such as cell phones and email, perceived differences between the adolescent respondents and their parents were smaller.

Paired *t* tests and Cohen's *d* were also calculated separately by gender for perceptions of mother and father technology knowledge. Table 7 includes the data that summarizes these mean differences. As was indicated by the *t* tests with the total sample, late adolescents of both genders reported having greater knowledge than their parents in every scale of interactive technology knowledge. When examined separately for each gender, the mean differences followed a similar pattern for males and females. Both males and females indicated the largest mean differences when comparing perceived mother knowledge and adolescent self-reports in the areas of general social networking

Table 7

Paired Sample t *Tests for Late Adolescent and Perceived Parent Interactive*

Technology Knowledge by Gender

		Late Adolescent		Parent			
Variable	*n*	Mean	*SD*	Mean	*SD*	*t*	*d*
Male late adolescents							
Mother perceived knowledge							
Video chat	63	12.30	11.46	4.92	8.70	5.43***	.725
Cell phones	69	17.09	4.46	10.78	6.85	8.24***	1.092
General social networking	73	10.00	2.92	3.73	3.65	13.75***	1.897
Twitter	95	2.32	3.03	.33	1.03	6.37***	.879
Basic email	72	7.38	1.53	6.06	2.77	3.74***	.590
Advanced email	71	6.14	2.27	4.63	2.93	4.20***	.576
Father perceived knowledge							
Video chat	67	17.10	4.77	8.58	10.50	3.62**	1.413
Cell phones	63	17.10	4.78	13.40	7.69	3.82***	.578
General social networking	68	9.72	3.10	3.52	4.56	11.48***	1.590
Twitter	92	2.28	3.00	1.07	2.21	3.20**	.459
Basic email	73	7.32	1.54	6.36	2.79	2.68**	.426
Advanced email	74	6.27	2.11	5.34	2.83	2.58*	.373
Female late adolescents							
Mother perceived knowledge							
Video chat	281	14.52	11.76	4.46	7.83	15.21***	1.007
Cell phones	309	17.89	3.18	11.64	6.12	18.20***	1.282
General social networking	371	10.56	2.28	3.70	3.63	31.97***	2.263
Twitter	458	1.98	2.89	.46	1.49	11.64***	.662
Basic email	380	7.52	1.25	6.38	2.48	8.30***	.581
Advanced email	345	5.94	2.20	4.75	2.59	7.37***	.495
Father perceived knowledge							
Video chat	338	16.20	11.38	7.88	10.29	12.08***	.767
Cell phones	303	18.02	3.29	14.05	7.24	9.35***	.706
General social networking	348	10.48	2.32	3.80	4.65	23.61***	1.818
Twitter	437	2.02	2.92	.87	2.13	7.53***	.450
Basic email	402	7.45	1.31	6.67	2.52	5.56***	.388
Advanced email	391	6.00	2.15	5.52	2.66	2.86**	.198

*p < .05, **p < .01, *** p < .001.

and cell phones. Also, both males and females indicated that their largest perceived

knowledge differences with their fathers were in the technology sources of video chat and

general social networking. Again both males and females indicated that they perceived larger gaps in knowledge in newer technologies and smaller gaps in technologies that have been around longer. In general, perceived differences in mother and father knowledge remained constant when analyses were conducted separately for gender.

Collectively, these data confirm the existence of a perceived digital generation gap in knowledge pertaining to interactive technology. For every comparison, late adolescents perceived that they knew more about each of these technologies than they believed their parents knew. This is true regardless of the specific technology that was being compared and regardless of adolescent and parent gender. Indeed, the perceived digital generation gap exists.

Data Preparation for Research Questions 2 through 4

Research questions 2, 3, and 4 each examined the potential differences in parent-child relationship characteristics when there are perceived differences in knowledge concerning interactive technology. To answer each of these questions maternal and paternal difference scores were calculated by subtracting perceived mother and father interactive technology scores from late adolescent self-reports of their own technology knowledge. These scores were calculated for each of the six interactive technology scales resulting in 12 difference scores. Difference scores were used to identity adolescents who perceived that they had more knowledge than their parents, adolescents who perceived a similar level of expertise as their parents, and adolescents who perceived that their parents possess more technology knowledge than them on each of the six scales

(see Table 8). With the exceptions of basic email and Twitter, the largest percentages of difference scores were in the category of late adolescents perceiving that they had greater knowledge than their parents. The smallest category was when late adolescents perceived that their parents knew more about technology than they did.

The original plan for data analysis for research questions 2 through 4 was to use the generated difference scores in linear regressions. However, the difference score calculation required that the late adolescent gave a response on each of the items, for themselves and for their parents. As evidenced in Table 8 the sample size decreased in each of the scales of interactive technology knowledge. Further, it was apparent that the sample sizes were not equal for each of the subscales, indicating that some respondents provided data on one or more measures, but not on others. The planned regression analyses required that each participant have a score on all six of the technology difference scores, as well as each of the three dependent variables. To be included in this process there could be few missing difference scores. This removed participants who did not complete the items on every scale. This diminished the sample size considerably, especially when conducting analyses separately for gender. Consideration was given to substitute the mean for missing data, but this was rejected because there were more than a few cases of missing data.

Given the intended purpose of this study (an exploratory study about a perceived digital generation gap and the potential influence of this gap on perceived parent-child characteristics), it was decided to report means, standard deviations, independent *t* tests, and effect size (Cohen's *d*. To increase the ease of interpretation, *t* tests were provided,

Table 8

Differences and Similarities in Late Adolescent and Perceived Parent Interactive

Technology Knowledge

Technology source	Parents knew more		Similar knowledge for late adolescents and parents		Late adolescents knew more		
	n	%	*n*	%	*n*	%	*N*
Video chat							
Mothers	23	6.70	110	32.00	211	61.33	344
Fathers	57	14.07	101	25.00	247	61.00	405
Cell phones							
Mothers	34	9.00	54	14.3	290	76.70	378
Fathers	83	22.70	111	33.04	172	47.00	366
General social networking							
Mothers	16	3.60	25	5.63	403	91.00	444
Fathers	31	7.50	53	12.74	332	80.00	416
Twitter							
Mothers	16	2.90	328	59.30	209	37.80	553
Fathers	69	13.04	378	52.60	182	34.05	529
Basic email							
Mothers	47	10.40	252	55.80	153	33.90	452
Fathers	73	15.40	275	57.90	127	27.00	475
Advanced email							
Mothers	101	24.30	94	22.60	221	53.13	416
Fathers	147	31.60	133	29.00	119	43.00	465

but Cohen's *d* was the primary focus to discuss mean differences. Difference scores were

employed to create two groups for each of the six technology categories. One group

consisted of participants who perceived that they knew more than their parents about a

specific technology. The other group consisted of participants who perceived that their knowledge about a specific technology was less than or equal to that of their parent. From this point on the latter group is discussed as the similar parent-late adolescent knowledge group. These groups were created for each of the six technology modalities, thus ensuring that all participants who provided information about themselves and their parents for a specific modality were included in the analysis that focused on that modality (In other words, participants were not excluded from an analysis because they did not provide self and parent information for all six modalities).

By using this revised methodology, a pattern of the influence of a perceived generation gap was made possible without the exclusion of entire cases due to missing data. Means, standard deviations, and independent *t* tests were calculated separately for perceptions of father and mother as a total sample, for male participants, and for female participants. The focus of the following research questions was to identify patterns (not to test hypotheses), so attention was given to differences in means—not statistically significant differences. The calculation of multiple independent *t* tests on one set of data increases the likelihood of alpha inflation. Significance scores are presented in the tables in order to increase the ease of identifying large mean differences, but are not the focus of this exploratory study. With different number of items on each scale, effect sizes (Cohen's *d*) were used to assess the magnitude of mean differences.

Research Question 2

The purpose of research question 2 was to examine differences in perceived

parent-child quality time when there were perceived differences in interactive technology knowledge between parents and late adolescents. Effect size (Cohen's *d)* was used to assess mean differences. Perceived parent-child quality time was compared between late adolescents who perceived that their parents had more or similar technology knowledge and late adolescents who perceived that they had more knowledge than their parents. These analyses were conducted separately for perceptions of mother and father and for males and females (see Table 9).

When the analyses were calculated for late adolescent females it became apparent that there were not large mean differences between parents knowledge groups with regard to perceptions of quality time. However, there were differences that were identified for male late adolescents. Males who reported that their mothers had less knowledge about social networking than themselves also perceived that they had 35% more quality time than males who perceived that their mothers had similar social networking knowledge.

A different pattern was identified for males' perceptions of basic email knowledge and maternal quality time. Male adolescents who perceived that their mothers had similar basic email knowledge as themselves perceived 46.4% more quality time with their mothers compared to males who perceived they had more knowledge than their mothers. A similar pattern was identified for late adolescents' perceptions of their fathers' knowledge about Twitter. Late adolescent males who perceived that their fathers had similar knowledge about Twitter reported 13.4% more quality time with their fathers than late adolescents who reported more knowledge than their fathers.

In sum, it appears that differences in late adolescent perceptions of their own and

Table 9

Independent t Tests for Perceived Parent-Child Quality Time and Perceived Technology Knowledge Differences

Technology source	Quality time with mother							Quality time with father						
		Mother's technology Knowledge greater than or equal to late adolescent's knowledge							Father's technology knowledge greater than or equal to late adolescent's knowledge		Late adolescent's technology knowledge greater than father's knowledge			
	n	*M*	*SD*	*M*	*SD*	*t*	*d*	*n*	*M*	*SD*	*M*	*SD*	*t*	*d*
Late adolescent males														
Video chat	63	3.13	2.62	2.73	2.55	.62	.155	67	2.81	2.57	2.46	2.17	.61	.147
Cell phones	69	3.32	2.61	2.60	2.68	1.00	.279	63	3.20	2.59	2.21	2.20	1.60	.412
General social networking	73	2.14	1.77	2.89	2.68	-.72	.330	68	2.50	2.35	2.93	2.47	-.58	.178
Twitter	95	2.95	2.52	2.25	2.31	1.37	.290	92	2.88	2.46	2.18	2.17	1.38	.302
Basic email	72	2.87	2.67	1.96	2.41	1.60	.358	73	2.80	2.43	2.26	1.96	.93	.245
Advanced email	71	2.87	2.61	2.56	2.59	.49	.119	74	2.93	2.50	2.52	2.53	.70	.163
Late adolescent females														
Video chat	280	3.88	2.76	3.93	2.77	-.14	.018	337	2.94	2.67	2.53	2.47	1.44	.159
Cell phones	308	3.93	2.71	3.64	2.77	.76	.106	302	2.81	2.47	2.19	2.33	2.22*	.258
General social networking	370	3.85	2.38	3.95	2.72	-.20	.039	346	2.77	2.56	2.58	2.42	.59	.076
Twitter	457	4.07	2.72	3.62	2.58	1.69	.170	456	2.70	2.55	2.34	2.19	1.58	.151
Basic email	379	4.16	2.71	3.59	2.80	1.91	.207	378	2.73	2.56	2.31	2.25	1.57	.174
Advanced email	344	3.96	2.64	3.83	2.76	.44	.048	343	2.64	2.36	2.50	2.57	.55	.057

* *p* < .05, ** *p* < .01, *** *p* < .001.

their parents' technological knowledge are relatively weakly related to parent-child

quality time. No large differences between parent interactive technology knowledge

groups were identified for female late adolescents' perceptions of parent-child quality

time. The direction of the relations between late adolescent males' reports of their

mother's knowledge about email and their father's knowledge about twitter and quality

time were the same. When late adolescent males perceived that they had more knowledge

than their parents in these areas they also reported lower quality time. However, late

adolescent males reported less maternal quality time when they perceived that they had

similar knowledge concerning general social networking as their mothers.

Research Question 3

The third research question investigated differences in perceived parent-child

conflict between late adolescents and their parents when there were perceived differences

in interactive technology knowledge. Again, Cohen's *d* was calculated to identify mean

differences. Analyses were conducted separately by mother, father, and gender (see Table

10).

The largest mean difference for late adolescent males was in the knowledge area

of general social networking. Late adolescent males who perceived that their mothers

had similar knowledge about general social networking as themselves also reported

57.3% more mother-child conflict than males who perceived more knowledge about

social networking than their mothers. The pattern was different for advanced email and

maternal conflict. Late adolescents reported 22.4% more conflict when they perceived

Table 10

Independent t *Tests for Perceived Parent-Child Conflict and Perceived Technology Knowledge Differences*

| | Perceived conflict with mothers | | | | | | Perceived conflict with fathers | | | | | |
| | Mother's technology knowledge greater than or equal to late adolescent's knowledge | | Late adolescent's technology knowledge greater than mother's knowledge | | | | Father's technology knowledge greater than or equal to late adolescent's knowledge | | Late adolescent's technology knowledge greater than father's knowledge | | | |
Technology source	*n*	*M*	*SD*	*M*	*SD*	*t*	*d*	*n*	*M*	*SD*	*M*	*SD*	*t*	*d*
Late adolescent males														
Video chat	63	1.02	.44	1.05	.84	-.18	.045	66	.80	.47	1.10	1.23	-1.38	.322
Cell phones	69	1.13	.47	1.06	.74	.35	.113	60	.93	.52	.94	.98	-.08	.013
General social networking	73	1.62	1.47	1.03	.50	2.33*	.537	67	.94	1.24	.98	.81	-.13	.038
Twitter	95	1.13	.70	1.04	.55	.65	.143	90	.96	.78	.95	.92	.04	.012
Basic email	72	1.09	.38	1.20	.95	-.74	.152	72	.87	.68	1.14	1.11	-1.30	.293
Advanced email	71	.98	.45	1.20	.82	-1.35	.333	73	.98	.76	.88	.97	.47	.115
Late adolescent females														
Video chat	281	1.16	.53	1.25	.57	-1.34	.164	335	.83	.62	1.02	.60	-2.77**	.311
Cell phones	309	1.26	.57	1.20	.55	.85	.107	300	1.00	.60	.92	.60	1.04	.133
General social networking	371	1.31	.54	1.24	.56	.73	.127	345	.96	.64	.99	.59	-.37	.049
Twitter	458	1.19	.53	1.38	.56	-3.64***	.348	453	.89	.59	1.10	.61	-3.63***	.350
Basic email	380	1.25	.51	1.30	.65	-.68	.086	376	.94	.60	1.02	.62	-1.15	.131
Advanced email	345	1.27	.56	1.27	.55	.05	.000	341	.96	.60	1.03	.63	-1.00	.114

* *p* < .05, ** *p* < .01, *** *p* < .001.

that they knew more about advanced email than their mothers when compared to males who perceived that their mothers had similar knowledge of this technology.

Additionally, a difference was identified with late adolescent males and their perceptions of paternal conflict. When fathers were perceived by late adolescent males to have less knowledge about video chat than themselves late adolescent males perceived 37.5% more conflict with their fathers when compared to fathers who were perceived to have similar knowledge about video chat.

This same pattern with knowledge about video chat and paternal conflict was identified with female late adolescents. When female adolescents reported that they knew more about video chat than their fathers they also perceived 22.9% more conflict than late adolescents who perceived that their fathers had similar knowledge about video chat. Female late adolescents who perceived that they had more rather than similar knowledge about Twitter than their fathers also perceived more conflict (23.6%). This pattern held true for late adolescent females' perceptions of maternal conflict. Late adolescents who perceived more Twitter knowledge than their mothers reported more maternal conflict (16%) than late adolescents who perceived similar knowledge about Twitter.

Results indicated that there are relations between perceived parental-conflict and perceptions of technological knowledge differences between late adolescents and their parents. In general, it appears that the largest mean differences seemed to follow a trend with more knowledge in newer interactive technologies (e.g., Twitter, video chat, and social networking) being related to greater conflict than technological knowledge

concerning older interactive technologies (e.g., basic email, cell phones).

This trend was evidenced with larger conflict means when females perceived that they had more knowledge about Twitter than both their parents. Greater conflict was also identified when female late adolescents perceived that they had more video chat knowledge than their fathers. Mean differences for males also followed this trend. Late adolescent males indicated higher means of perceived paternal conflict when they perceived that they knew more about video chat than their fathers. However, males reportedly had higher conflict means when they perceived their mothers had similar knowledge about general social networking.

Research Question 4

The intent of the fourth research question was to identify perceived differences in parental-knowledge of late adolescent children's behavior when there were perceived differences in interactive technology knowledge. Effect sizes (Cohen's *d)* were used to identify the most meaningful mean differences. Again, analyses were conducted separately for mother, father, and late adolescent gender (see Table 11).

The largest mean parental-knowledge difference identified for late adolescent males and their fathers was in the area of video chat knowledge. Late adolescent male who perceived that they and their fathers had similar knowledge about video chat also perceived that their fathers knew more (26.4%) about their behaviors when compared to males who perceived that they knew more about video chat than their fathers. Among late adolescent males who perceived that they had similar knowledge about Twitter as their fathers, perceived paternal-knowledge of their behaviors was greater (18.5%) than

Table 11

Independent t *Tests for Perceived Parental-Knowledge of Child's Behavior and Perceived Technology Knowledge Differences*

| | Perceived maternal knowledge | | | | | | | Perceived paternal knowledge | | | | | | |
| | Mother's technology knowledge greater than or equal to late adolescent's knowledge | | | Late adolescent's technology knowledge greater than mother's knowledge | | | | Father's technology knowledge greater than or equal to late adolescent's knowledge | | | Late technology adolescent's knowledge greater than father's knowledge | | | |
Technology source	*n*	*M*	*SD*	*M*	*SD*	*t*	*d*	*n*	*M*	*SD*	*M*	*SD*	*t*	*d*
Late adolescent males														
Video chat	63	2.76	.90	2.83	.76	-.32	.084	65	2.73	1.11	2.16	1.24	1.96	.484
Cell phones	69	2.97	.48	2.80	.77	.85	.265	62	2.96	1.03	2.19	1.27	2.61*	.666
General social networking	73	2.67	.54	2.86	1.15	-.58	.211	67	2.70	1.30	2.33	1.20	1.02	.296
Twitter	95	2.80	.86	2.85	.86	-.31	.058	90	2.63	1.15	2.22	1.27	.75	.338
Basic email	72	2.98	.76	2.66	.91	1.62	.382	72	2.73	1.13	2.37	1.42	1.14	.281
Advanced email	71	2.80	.81	2.90	.82	-.54	.123	72	2.60	1.13	2.49	1.30	.39	.090
Late adolescent females														
Video chat	278	2.96	1.02	2.89	.94	.58	.071	327	2.42	1.28	2.28	1.18	.96	.114
Cell phones	307	2.96	.90	2.83	.95	1.02	.140	296	2.51	1.09	2.17	1.23	2.55*	.293
General social networking	370	3.17	.93	2.88	.94	1.74	.310	335	2.46	1.17	2.38	1.18	.56	.068
Twitter	455	2.98	.90	2.81	.97	4.85	.182	441	2.43	1.14	2.30	1.19	1.10	.112
Basic email	377	3.01	.88	2.70	1.05	3.00**	.320	366	2.37	1.19	2.33	1.17	.30	.034
Advanced email	342	2.99	.90	2.78	1.04	.20*	.216	334	2.37	1.24	2.25	1.24	.84	.048

* *p* < .05, ** *p* < .01, *** *p* < .001.

late adolescents who reported that they knew more about Twitter than their fathers.

Both male and female late adolescents reported the same relationship between basic email and maternal-knowledge of their behaviors. Late adolescents who perceived that they had similar basic email knowledge as their mothers also perceived more maternal-knowledge (12% more for males and 11.5% for females) of their behaviors when compared to late adolescents who reported more knowledge about basic email than their mothers. Female late adolescents also reported differences in maternal-knowledge of behaviors and general social networking knowledge. When similar general social networking knowledge between mothers and daughters was reported, late adolescents perceived that their mothers also had more knowledge (10.1%) of their behaviors when compared to females who reported more social networking knowledge than their mothers.

In sum, it appears that differences in interactive technology knowledge are related to differences in perceived parental-knowledge of late adolescents' behaviors. Results indicate that similar basic email knowledge between mothers and their late adolescent children was related to more perceived parental-knowledge. Males reported more paternal-knowledge of their behaviors when they perceived that they and their fathers had similar knowledge about video chat and Twitter. Females reported more maternal-knowledge of their behaviors when they perceived that their mothers had similar knowledge about general social networking as themselves.

Summary

These analyses confirmed the existence of a perceived digital generation gap

pertaining to interactive technology. Late adolescents perceived that they knew more about each of the six interactive technology measures than they believed their parents knew. These findings were evident regardless of adolescent and/or parent gender. Late adolescents, in general, perceived that gap was larger for mothers than fathers.

Perceived quality time with parents was related to differences in interactive technology knowledge between late adolescents and their parents. Differences were found among late adolescent males, but not among late adolescent females. Late adolescent males perceived more paternal quality time when their knowledge concerning Twitter was similar. Also, late adolescent males perceived more maternal quality time when they perceived that their mothers had similar knowledge concerning basic email and general social networking.

Relations were also identified between interactive technology knowledge differences and perceived parental-conflict. When female late adolescents perceived more Twitter knowledge than their parents they also perceived more conflict with both mother and father. Male and female adolescents also indicated when they perceived that they knew more about video chat than their fathers they also perceived more conflict. Males who reported having more general social networking knowledge than their mothers reported less maternal-conflict. In general, findings indicated that more recent developments in interactive technology were more relevant to differences in perceived parental-conflict. Differences in perceived conflict ratings were smaller in mediums that have been around for a longer period of time.

Perceived parental-knowledge of late adolescents' behavior was related to some

differences in perceptions of interactive technology knowledge. When late adolescents

(males and females) perceived similar basic email skill between themselves and their

mothers they also reported higher parental-knowledge (for both fathers and mothers).

Perceived similarities in mother-daughter general social networking knowledge were

related to more perceived maternal-knowledge of behaviors. Males perceived more

paternal-knowledge of their behaviors when they also perceived that their fathers had

similar knowledge about video chat and Twitter.

CHAPTER V

DISCUSSION

The purpose of this exploratory study was to determine if there was a perceived digital generation gap between late adolescents' interactive technology knowledge and perceptions of their parents' interactive technology knowledge. The second goal of the study was to identify patterns of association between a perceived digital generation gap and late adolescents' perceptions of parent-child relationship characteristics. This chapter discusses the reality of the perceived digital generation gap and the specific relationship patterns between three selected perceived parent-child relationship characteristics.

Perceived Digital Generation Gap

Digital generation gaps have been defined as generational differences in the adaption and use of technology (Clark, 2009; Livingstone, 2003). Until now, the digital generation gap has not been documented quantitatively. Previous generation gap research, in general, identified small generational differences when attempting to identify actual gaps between parents and late adolescents (Acock & Bengston, 1980). Generation gap researchers have suggested that a better question to ask is, "Where the generation gap is real" (Acock & Bengston, 1980, p. 502). The current study asked late adolescents to rate their own knowledge and their parents' knowledge of interactive technology.

Quantitative results in the current study provide evidence for the previously identified perceived generational technology differences that emerged in qualitative

reports (Clark, 2009). Late adolescents consistently rated their knowledge higher than their parents in six different areas of interactive technology knowledge. The results indicated that late adolescents, as a whole, did not perceive that their parents had no knowledge of these technologies, but their perceptions did indicate that they believed that they knew more than their parents. This phenomenon was observed with both newer and older interactive technologies and when investigated separately by gender.

The perceived technological generation differences followed a trend with the smallest differences evidenced in technologies that have been around for the longest time. This makes intuitive sense because adults have had more opportunity to learn and adapt to technologies with which they have had more contact. The largest perceived generational technology differences were identified among more recent interactive technologies. Kelty (2000) indicated that adults had a difficult time learning new computer skills. It may be that adults find adapting to new interactive technologies challenging as well.

As part of the preliminary descriptive statistics, participants were asked to report all of the different sources (e.g., parents, peers, self-taught, and so forth) they used to learn about each area of interactive technology (see Appendix B). The largest percent of adolescent reports of learning about interactive technology (at least in part) from their parents was in the areas of email (51.66%) and cell phones (33.94%). Smaller percentages of participants indicated that they have learned about video chat (13.41%) and social networking (5.30%) from their parents. On the other hand, peers were commonly cited as educational sources for email (46.20%), cell phones (70.70%), video

chat (47.50%), and social networking (78.15%). A question asked late adolescents to report the most likely source they would consult to learn about a new technology. Only 4.80% of late adolescents mentioned parents. Late adolescents indicated that they would teach themselves (34.00%) or consult with peers (47.00%).

Late adolescent reports implied that they consulted their parents about technologies that have been around for some time, but fewer have learned about newer technologies from their parents. Even a smaller number of participants indicated that they would seek knowledge about new technologies from their parents. These percentages are consistent with the trend identified in the perceived digital generation gap. This finding may be related to bidirectional learning processes, with parents teaching their children concerning older technologies and late adolescents mentoring parents on new technologies. However, it is interesting to note that late adolescents reported that they would most likely consult peers when learning about new technology. There may be a relationship between peer influence and a perceived digital generation gap between parents and children.

Video Chat and Social Networking

The largest differences between late adolescents and their perceptions of their parents' knowledge concerned general social networking and video chat knowledge. These technologies were both developed more recently. For example, the most frequently used social networking site, Facebook, was started in 2004 and released for complete access to the general public in 2006 (Boyd & Ellison, 2007). Skype (the most popular medium of video chat) was made available in 2003 (Ehlert & Petgang, 2006).

It is interesting to note that the largest perceived difference was identified in general social networking knowledge. Facebook and other social networking sites like it may be less intimidating than video chat because features have more resemblance to other online activities such as email (e.g., sending typed messages, attaching pictures). Video chat technology is dissimilar from traditional text-based interactive technologies and additional features and knowledge required—computers require video cameras in order to use video chat. Video chat also requires knowledge of setting up the program, making sure the camera works, and answering or dialing out.

Facebook has received much public attention including the release of a major motion picture about the development of the service (see www.thesocialnetwork-movie.com/). More recently media attention and access to video chat has increased. Google has provided video chat options through their email service (see www. gmail.com). The new social networking site Google + provides access to video chat (see www.google.com/+) and new apps that enable video chat have been developed such as Facetime (see www.apple.com/mac/facetime/). Skype apps for iPhones, iPads, and other Apple products have also led to large increases in Skype usership (Carr, 2011).

Additionally, a deal was made with Facebook representatives to make video chat available for users through Skype (see https://apps.facebook.com/skype_me/). The previous absence of these services, recognition, and availability may explain the large perceived gap in video chat knowledge between parents and late adolescents. Having more media attention and access points (not just the computer and not just Skype) could

potentially increase both adolescent and perceived parent knowledge concerning video chat.

Cell phones

Perceived differences in cell phone knowledge were also identified between late adolescents and parents. However, the gap was smaller than gaps identified in perceived knowledge about video chat and social networking. The Federal Communication Commission (FCC) approved commercial cellular service in 1982 and in 1987 cell phone subscribers exceeded 1 million people (Zheng & Ni, 2006). Since the late 1980s to the present time, cell phone ownership has increased and there have been large advances in cell phone capabilities (e.g., smart phones). This interactive technology has been around for over 25 years which would imply that most parents have had some experience with cell phones. This could explain the smaller perceived generation gap between late adolescents and their parents. However, the cell phone knowledge gap was still larger than Twitter, basic email, and advanced email knowledge. Zickuhr (2011) indicated that people over the age of 35 typically do not use their cell phones for features other than talking. On the other hand, adolescents use their cell phones for a variety of non-voice interactive functions (Lenhart et al., 2010). The perceived gap may be evidence that parents have not adapted to the non-voice interactive features that have become quite common with adolescent cell phone use. This could be especially true with mothers because the perceived cell phone knowledge gap was larger than were perceptions of fathers.

Twitter

Compared to the other interactive technologies perceived Twitter knowledge was relatively low for late adolescents and parents. Still late adolescents did perceive that they knew more about Twitter when compared to their parents. Twitter became a public social networking service in 2006, just before Facebook was made accessible to the general public (Boyd & Ellison, 2007). During approximately the same time period Twitter has claimed to have 100 million users and Facebook has generated a reported 300 million users (Sherman, 2012). The low amount of knowledge about Twitter is likely a result of the fewer number of people who use it. However, new applications in both Twitter and Facebook allow users to connect their accounts from both services (see www.support.twitter.com). This could be perceived as a more complicated feature on Facebook and most likely late adolescents would use this feature more often than parents. The ability to connect the two social networks and the capabilities to post information on both services using smart phone technology may explain the knowledge difference in this area of interactive technology knowledge between parents and late adolescents.

Email

The smallest perceived knowledge differences between parents and their late adolescent children were in the knowledge areas of basic and advanced email. Email technology in the 1980s was available in the military, select universities, commercial providers, and private corporations (Partridge, 2008). By 1995, email technology was made publicly available. Email technology has been around for some time in comparison to other interactive technologies. Also, Zichuhr (2010) indicated that email is the most

frequent interactive technology used by adults between the ages of 35-45. The length of time and experience that parents have had with email is most likely related to late adolescents' smaller perceived differences. However, features made available by different email services have evolved and new features have been made available. The newer features (e.g., instant messaging) require some additional skill. This may explain why adolescents still perceived greater knowledge (although smaller than other categories) about email when compared to their perceptions of their parents' knowledge.

Parent-Child Relationship Characteristics

The data in this study indicated that there is a perceived digital generation gap in interactive technology knowledge between perceptions of late adolescent and parent knowledge. The second part of this study identified the patterns that emerged in perceived parent-child relationship characteristics when perceived digital generation differences were present. The selected relationship characteristics for investigation in this study were perceived parent-child quality time, perceived parent-child conflict, and perceived parental-knowledge of children's behaviors. Particular attention was given to understand how these differences might be related to the process of individuation. Grotevant and Cooper (1986) indicated that this relationship quality can be identified through the interplay between individuality and connectedness in parent and late-adolescent relationships.

Perceived Parent-Child Quality Time

Limited research is available concerning parent-child quality time when children

move into late adolescence. Quality time in this study was defined as interaction time (e.g., face-to-face, over the phone, texting) between parents and their children when they felt together, close, or connected. Results indicate that perceived quality time with parents was related to differences in perceived interactive technology knowledge. Meaningful effects of a parent-late adolescent knowledge gap were not identified for females. Males who perceived that they had more knowledge than their mothers concerning email and more knowledge concerning Twitter than their fathers reported less quality time with their parents. It appears that mothers that know basic email skills and fathers who know how to use Twitter stay close with their late adolescent sons.

In research question one, email was the technology source with the smallest perceived differences between parents and late adolescents. Also, in the preliminary descriptive statistics concerning technological learning sources, 51.66% ($N = 604$) of the respondents stated that they learned about email, at least in part, from their parents. It may be that when mothers do not have the skills to use basic email, they may also lack the capacity to use other interactive technology sources. Connectedness in the individuation process is evidenced by the qualities of mutuality and permeability (Grotevant & Cooper, 1986). The perceived lack of parental basic technology skills may make it more difficult for late adolescents who live away from home or who are frequently away from home to find ways develop or maintain mutuality.

A unique pattern was identified between parent-child quality time and the mediums of social networking. When males perceived that they had more social networking knowledge they also perceived more maternal-child quality time. This

difference may be related to the preference in how late adolescents like to interact with their mother. Gentzler and colleagues (2011) indicated that when late adolescents communicated with their parents over social networking they reported more conflict, anxious attachments, and loneliness. Social networking may not be a medium that leads to feelings of closeness, togetherness, or connectedness for late adolescent males.

Perceived Parent-Child Conflict

In this study, differences in perceived technological knowledge was related to different patterns of parent-child conflict in late adolescence. One important finding was that more parent-child conflict was reported when there were knowledge gaps with newer technologies. Mesch (2006a) stated that the likelihood of conflict increased when adolescents were perceived as the technology experts in a parent-child relationship. It may be that late adolescents who have more proficiency with new technologies are viewed as experts, which could lead to increased parent-child conflict. The conflict may facilitate some of the negotiation of individuation in the relationship.

Females who perceived more Twitter knowledge than their parents (mother and father) also perceived more parental conflict. Mesch (2006b) indicated that parent-child conflict was related to the purposes of adolescent internet use. Adolescents perceived parent-child conflicts when they used the internet for social purposes. Twitter's primary function is to relay social information. Late adolescents may perceive more parent-child conflict because of disagreements about how time should be spent on the internet.

Late adolescents (male and female) who perceived that they had more knowledge about video chat than their father also reported more parental conflict. A possible

explanation for greater conflict could be related to the fathers' actual lack of knowledge about video chat. One previous research study indicated that adolescents did perceive that they had more technology knowledge than their parents, and the adolescents in the study suggested that if parents did not adapt to new technologies, the dynamics of parent-child communication would change (Cooper, 2009). Late adolescents may be frustrated with their fathers for their lack of knowledge about video chat because this medium has become a staple for communication in their other relationships. A father's lack of knowledge may decrease a late adolescent's desire for connectedness and increase separateness in the parent-child relationship while they live away from home.

Knowledge about general social networking followed a different pattern. When male late adolescents perceived that they had more knowledge than their mother about social networking, they also perceived lower levels of maternal conflict. This is consistent with previous research on parent-late adolescent communication via social networking. Late adolescents reported increased parent-child conflict when communicating over social networking (Gentzler et al., 2011). Also, Weisskirch (2010) indicated that parent-child conflict increased when parents used interactive technologies to monitor behaviors or track schoolwork. The lower levels of conflict may be related to the decreased likelihood of their mothers monitoring their behaviors or checking up on them via social networking sites. When late adolescent males had similar knowledge as their mothers they reported increased maternal conflict. Similar mother-son knowledge about social networking would increase the opportunities to communicate or perceive monitoring behaviors through social networking—increasing the possibility of parent-

child conflict. The frequency and ease made possible with this interactive technology may lead adolescent males to feeling controlled by their mothers. Previous research has shown that when late adolescents felt controlled they also perceived less autonomy (Cullaty, 2011). Late adolescent males may negotiate their individuation with their mothers by having privacy on their social networking sites. Grotevant and Cooper (1986) indicated that individuality is reflected by self-assertion and separateness. Males who have more knowledge than their mothers about social networking could most likely keep some information private or separate from their mothers.

Social networking is still a relatively new interactive medium. One study indicated that when parents were beginners with technology, parent-child conflict was low (Mesch, 2006b). It was suggested that parents may keep the peace because they are relying on their adolescents for assistance with the technology. When late adolescent males know more about social networking they may be experiencing low conflict in their mother-child relationship because they are teaching their mother how to use social networking. This could increase connectedness in the mother-child relationship, but may also impede the development of individuality.

**Perceived Parental-Knowledge
of Children's Behaviors**

When late adolescents (males and females) perceived more basic email knowledge than their mothers, they reported lower amounts of maternal-knowledge of their behaviors. Parental-knowledge of a child's behaviors is closely related to youth disclosure to parents (Kerr et al., 2010). Email is one of the most basic and oldest

interactive technologies. If mothers do not know how to use this technology they may not use many of the interactive technologies. This could potentially decrease connectedness in the relationship and lead to limits in child self-disclosure. When mothers have similar knowledge about basic email (and even in some cases have taught their child about the technology) late adolescents' may perceive a supportive parent-child relationship in which self-disclosure can occur, which could be part of maintaining/developing mutuality in the process of negotiating connectedness.

Males indicated that when they perceived that they had more knowledge about Twitter and video chat than their fathers they also perceived less paternal-knowledge of their behaviors. Twitter and video chat are both newer technologies. Yardi and Bruckman (2011) reported that parents found it difficult to monitor their adolescents' behaviors because they were unfamiliar with technology. Unfamiliarity with technology may limit the monitoring of late adolescent behaviors associated with technology and could extend to a lack of knowledge concerning behaviors in different areas of late adolescents' lives. This disconnect in knowledge concerning new technologies may lead to limit the development of connectedness in the father-son relationship. This same line of thought may explain why female late adolescents reported increased maternal knowledge of their behaviors when their mothers had general social networking knowledge similar to their own. Mothers that have the knowledge to use general social networking can communicate more frequently and have access to a variety of information in their daughters' lives.

Limitations and Recommendations

One of the limitations of this study was the cross-sectional design. The design was deemed appropriate because this was an exploratory study aimed at identifying the existence of a perceived digital generation gap. This design allowed for data to be collected from a large number of late adolescents in a short period of time. However, the design did not allow for an understanding of how changes occurred over time. Another limitation was the convenient, predominately female, and mostly Caucasian sample. The sample and sampling methods limit the generalizability of the results. There were high rates of participation in this study. These rates could be attributed to the extra credit/class participation incentive, the online nature of the survey (convenience), the class visits, online instructions, and reminders.

Prior to this study, no measures of interactive technology knowledge had been developed. Thus, measures of perceived technology knowledge had to be developed for this study and psychometric properties were not available prior to use. However, the measure did exhibit strong psychometric properties within this study (e.g., Cronbach's alphas for late adolescents' reports of their own knowledge ranging from .72 to .98 and .73 to .98 for perceptions of parent knowledge about interactive technology). Also, the survey was very lengthy and administered in an online format. There were many questions in which late adolescents did not answer. Previous research on online surveys indicate the increased benefits of anonymity and reduction of researcher bias, but also point out that the anonymity also makes following up on missing data nearly impossible (Cantrell & Lupinacci, 2007). Future online surveys may follow Cantrell and

Lupinacci's (2007) suggestion to make each of the fields a requirement to proceed in the survey. The online survey in this study did use required fields in order to provide credit for completion, but other fields were not made to be required.

The study as a whole was designed to measure perceived interactive technology differences. Parent data was collected to show congruence between late adolescents' perceptions of parent knowledge. The focus on perceptions was intentional and based on recommendations from past research investigating generational differences (see Acock & Bengston, 1980). Now that a perceived digital generation gap has been identified efforts should be dedicated to identify the reality of an actual gap between parents and late adolescents.

It is recommended that future research use a longitudinal design to better understand how technology knowledge changes over time. One of the patterns identified in this study was that the perceived digital generation gap was largest among new technologies and smallest among technologies that have been available for some time. A longitudinal design would provide the opportunity to further explore this pattern and identify changes/maintenance of technology knowledge in adolescents and parents. Also, it would be ideal to have a psychometrically validated measure of interactive technology knowledge that is based on actual knowledge instead of perceptions or self-reports of knowledge. Future research should also attempt to replicate results with samples from more ethnically diverse populations.

Several different patterns were identified between generational differences in technology knowledge and perceived parent-child characteristics. Mixed method

approaches would be best in order to test potential hypotheses and generate in-depth understandings of the specific relationships. Late adolescents frequently mentioned peers as their educational source for learning about interactive technology. In the future, research should be directed at understanding the influence of peers on interactive technology. It may be that peer influence is related to the perceived digital generation gap between parents and late adolescents.

Summary

Research interest in generational differences surfaced in the 1960s and relatively small actual differences between parents and adolescents were identified (Jacobsen et al., 1975). Acock and Bengston (1980) indicated that the wrong questions were being asked in generation gap research. Earlier studies stated that a generation gap is real when there are perceived differences. The current exploratory study identified perceived generational differences in late adolescents' self-reports of interactive technology knowledge and perceptions of their parents' technology knowledge—indicating that the digital generation gap is real. The gap in technology knowledge was also related to patterns in perceived relationship characteristics between parents and late adolescents.

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APPENDICES

Appendix A

Tables

Table 12

Correlations Between Parent Reports and Late Adolescents' Perceptions of Parents'

Interactive Technology Knowledge

Technology source	Mother technology knowledge			Father technology knowledge		
	M	*SD*	*r*	*M*	*SD*	*r*
Video chat	*n* = 150			*n* = 118		
Late adolescent perception	5.19	8.66		8.27	10.65	
Parent perception	3.65	7.57	-.18	5.36	8.97	-.12
Cell phones	*n* = 176			*n* = 102		
Late adolescent perception	12.15	6.23		14.26	7.25	
Parent perception	12.48	6.63	.00	12.27	6.24	.19
General social networking	*n* = 247			*n* = 135		
Late adolescent perception	3.61	3.67		4.01	4.58	
Parent Perception	4.04	4.15	-.11	3.94	4.29	-.08
Twitter	*n* = 322			*n* = 176		
Late adolescent perception	.40	1.32		.87	2.06	
Parent perception	.54	1.57	-.02	.98	2.06	.08
Basic email	*n* = 265			*n* = 160		
Late adolescent perception	6.35	2.47		6.90	2.26	
Parent perception	6.59	2.30	-.02	6.45	2.38	.11
Advanced email	*n* = 235			*n* = 148		
Late adolescent perception	4.75	2.61		5.72	2.49	
Parent perception	4.64	2.69	-.01	4.71	2.48	.00

Table 13

Revision Decisions for the Issues Checklist (Abridged)

	Original Item	Decision	Revised Item
1.	Telephone calls	R	Phone calls
2.	Bedtime	R	Sleep habits
3.	Cleaning bedroom	D	Texting
4.	Doing homework	M	
5.	Putting away clothes	D	Borrowing money from parents
6.	Using the television	R	Time spent watching T.V.
7.	Cleanliness (washing, showers, brushing teeth).	R	Cleanliness (showers, brushing teeth, apartment, room).
8.	Which clothes to wear	M	Which clothes to wear (including how neat and clean they look)
9.	How neat clothes look	D	NOT REPLACED
10.	Making too much noise at home	D	Facebook (time spent, pictures, postings)
11.	Table manners	R	Manners and respectful behaviors
12	Fighting with brothers and sisters	R	Conflict with brothers and sisters
13.	Cursing	R	Swearing/Cursing
14.	How money is spent	M	
15.	Picking books or movies	R	Movie, book, and music preferences
16.	Allowance	M	
17.	Going places without parents (shopping, movies, etc.)	D	Spending time with family
18.	Playing stereo or radio to loudly	D	Church attendance
19.	Turing lights off in house	D	Debt (credit cards, loans, etc.)
20.	Using drugs	M	
21.	Taking care of records, games, bikes, pets and other things	R	Taking care of personal possessions (cars, electronic devices, and other things).
22.	Drinking beer or other alcoholic beverages	M	
23.	Buying records, games, toys, and other things	R	Buying music, movies, electronic devices, and other things
24.	Going on dates	M	
25.	Who friends should be	M	
26.	Selecting new clothes	M	
27.	Sex	M	
28.	Coming home on time	D	Texting/Talking on phone while driving
29.	Getting to school on time	D	
30.	Getting low grades in school	M	
31.	Getting in trouble at school	R	Getting in trouble at school (with the law, with the university)
32.	Lying	M	
33.	Helping around the house	D	Physical exercise
34.	Talking back to parents	M	
35.	Getting up in the morning	M	
36.	Bothering parents when they want to be alone	M	
37.	Bothering adolescent when he/she wants to be left alone	R	Bothering son/daughter when they want to be left alone.
38.	Putting feet on furniture	D	Being independent
39.	Messing up the house	D	Decision making
40.	What time to have meals	D	Time spent using the Internet
41.	How to spend free time	M	
42.	Smoking/spit tobacco	M	
43.	Earning money away from the house	R	Earning money
44.	What the adolescent eats	R	Eating habits

Note. R (Revise); D (Delete); M (Maintain).

Table 14

Late Adolescents' Reports of Where They Learned About Interactive Technologies

								Haven't learned about this technology	
Technology		Parents		Self-taught		Peers			
	N	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Email	600	312	52.00	471	78.00	279	46.20	0	0
Cell phones	601	204	33.94	507	83.94	427	70.70	0	0
Social networking	601	32	5.30	433	71.17	472	78.15	0	0
Video chat	602	81	13.41	282	46.70	287	47.50	139	23.01

Note. Late adolescents were asked to check all sources that were used in learning about the different interactive technologies. *N* refers to the number of participants who answered the question.

Table 15

Late Adolescents Time Spent With Interactive Technology Within the Last Week

Technology	Time spent	Males		Females	
		n	%	*n*	%
Cell phone	0 hours	3	3.0	1	0.2
	1 to 2 hours	21	20.8	53	10.5
	3 to 4 hours	19	18.8	96	19.1
	5 to 6 hours	14	13.9	77	15.3
	7 to 8 hours	15	14.9	64	12.7
	9 to 10 hours	5	5.0	62	12.3
	11 to 12 hours	7	6.9	43	8.5
	13 to 19 hours	8	7.9	41	8.2
	20 hours or more	9	8.9	66	13.1
Social networking	0 hours	13	12.9	14	2.8
	1 to 2 hours	29	28.7	117	23.3
	3 to 4 hours	29	28.7	124	24.7
	5 to 6 hours	11	10.9	89	17.7
	7 to 8 hours	5	5.0	48	9.5
	9 to 10 hours	8	7.9	40	8.0
	11 to 12 hours	5	5.0	24	4.8
	13 to 19 hours	1	1.0	25	5.0
	20 hours or more	0	0	20	4.0
Emailing	0 hours	14	13.9	70	13.9
	1 to 2 hours	67	66.3	330	65.6
	3 to 4 hours	12	11.9	61	12.1
	5 to 6 hours	7	6.9	24	4.8
	7 to 8 hours	0	0	3	0.6
	9 to 10 hours	1	1.0	4	0.8
	11 to 12 hours	0	0	4	0.8
	13 to 19 hours	0	0	4	0.8
	20 hours or more	0	0	3	0.6
Video chat	0 hours	13	12.9	14	2.8
	1 to 2 hours	29	28.7	117	23.3
	3 to 4 hours	29	28.7	124	24.7
	5 to 6 hours	11	10.9	89	17.7
	7 to 8 hours	5	5.0	48	9.5
	9 to 10 hours	8	7.9	40	8.0
	11 to 12 hours	5	5.0	24	4.8
	13 to 19 hours	1	1.0	25	5.0
	20 hours or more	0	0	20	4.0

Note. Percentages that do not add up to 100% are a result of missing data.

Appendix B

Late Adolescent Questionnaire

Questionnaire

Directions: Please circle or fill in your response to the following questions.

1. Your A#:_____

2. Last name of the Instructor whose class you are completing this survey for:_____

3. Select your gender: Male   Female

4. Your month of birth?

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Dec

5. Your birth year :_____

6. Do you consider yourself…

White/Anglo	Asian	Native American	African-American	Hispanic/ Latino	Other: ____

7. Which best describes your marital status

Single	Married	Cohabiting	Dating/Engaged

8. Which best describes your current living situation

With my parents	On campus single student housing	Off campus single student housing	With my partner/spouse	Other: _____

9. Which best describes the guardians in your household during the majority of your time in high school.

Both Biological Parents	Biological Mother and Stepfather	Biological Father and Stepmother	Single Mother	Single Father	Lesbian/ Gay Parents	Other: _____

10. How far away is your high school from Logan, UT? _____ miles

11. Your Height?   _____FT.   _____IN.

12. Your current weight?   _____lbs.

13. Thinking about the last week how much time have you spent using the following technology:

	0 hours	1 to 2 hours	3 to 4 hours	5 to 6 hours	7 to 8 hours	9 to 10 hours	11-12 hours	13-19 hours	20 hours or more
Cell Phone (e.g. talking, texting, internet)	1	2	3	4	5	6	7	8	9
Emailing	1	2	3	4	5	6	7	8	9
Social Networking (e.g., facebook, twitter, Google +)	1	2	3	4	5	6	7	8	9
Video Chat (SKYPE)	1	2	3	4	5	6	7	8	9

Directions: **You will be asked to report some information about your ability and your parents' abilities to use different features on cell phones, with email, on social networking sites, and with video chat. Circle the number that corresponds with the amount of knowledge that you and your parents have about each feature.**

How much do you know about using the following features?

Cell Phones		I Don't know		I Know a little		I Know a lot	
1	Checking email	1	2	3	4		5
2	Taking a picture	1	2	3	4		5
3	Sending a picture message	1	2	3	4		5
4	Setting up a	1	2	3	4		5

		voicemail					
5	Recording video	1	2	3	4	5
6	Sending a video message	1	2	3	4	5
7	Exchange instant messages	1	2	3	4	5
Email		I Don't know		I Know a little		I Know a lot
8	Identify Spam emails	1	2	3	4	5
9	Using instant messaging	1	2	3	4	5
10	Saving an email	1	2	3	4	5
11	Saving contacts	1	2	3	4	5
Social Networking (e.g., Facebook, Twitter, Googe+)		I Don't know		I know a little		I know a lot
12	Manage privacy settings	1	2	3	4	5
13	Using chat features	1	2	3	4	5
14	Blocking a person	1	2	3	4	5
15	Starting a group	1	2	3	4	5
16	Sending a Tweet	1	2	3	4	5
17	Following someone on Twitter	1	2	3	4	5
18	Make a profile	1	2	3	4	5

Video Chat (e.g., Skype)		I don't know		I know a little		I know a lot
19	Add contacts or friends	1	2	3	4	5
20	Make a call	1	2	3	4	5
21	Answer a call	1	2	3	4	5
22	Transfer a call	1	2	3	4	5
23	Set "online status" (available, away)	1	2	3	4	5
24	Deny a new contact	1	2	3	4	5
25	Download Skype	1	2	3	4	5
26	Adding or changing picture	1	2	3	4	5
27	Online voicemail	1	2	3	4	5
28	Calling landlines or cell phones from Skype	1	2	3	4	5

How much does your mother know about using the following features?

Cell Phones		She Doesn't know		She knows a little		She knows a lot
1	Checking email	1	2	3	4	5
2	Taking a picture	1	2	3	4	5
3	Sending a picture message	1	2	3	4	5

4	Setting up a voicemail	1	2	3	4	5
5	Recording video	1	2	3	4	5
6	Sending a video message	1	2	3	4	5
7	Exchange instant messages	1	2	3	4	5
Email		She Doesn't know		She knows a little		She knows a lot
8	Identify Spam emails	1	2	3	4	5
9	Using instant messaging	1	2	3	4	5
10	Saving an email	1	2	3	4	5
11	Saving contacts	1	2	3	4	5
Social Networking (e.g., Facebook, Twitter, Googe+)		She Doesn't know		She knows a little		She knows a lot
12	Manage privacy settings	1	2	3	4	5
13	Using chat features	1	2	3	4	5
14	Blocking a person	1	2	3	4	5
15	Starting a group	1	2	3	4	5
16	Sending a Tweet	1	2	3	4	5
17	Following someone on Twitter	1	2	3	4	5
18	Make a profile	1	2	3	4	5

Video Chat (e.g., Skype)		She Doesn't know		She knows a little		She knows a lot
19	Add contacts or friends	1	2	3	4	5
20	Make a call	1	2	3	4	5
21	Answer a call	1	2	3	4	5
22	Transfer a call	1	2	3	4	5
23	Set "online status" (available, away)	1	2	3	4	5
24	Deny a new contact	1	2	3	4	5
25	Download Skype	1	2	3	4	5
26	Adding or changing picture	1	2	3	4	5
27	Online voicemail	1	2	3	4	5
28	Calling landlines or cell phones from Skype	1	2	3	4	5

1. **During the last week how much total time did you spend interacting (face-to-face, online, texting, over the phone) with your mother?**

	0 minutes	1 to 30 minutes	31 minutes to 1 hour	2 to 3 hours	4 to 5 hours	6 to 7 hours	8 to 9 hours	10 to 11 hours	12 to 19 hours	20 hours or more
Mother	1	2	3	4	5	6	7	8	9	10

2. How much of this interaction time with your mother during the last week did you feel open to talk about things that are important to you, safe to ask questions, or like you could discuss things that you would not want any other person to know?

	0 minutes	1 to 30 minutes	31 minutes to 1 hour	2 to 3 hours	4 to 5 hours	6 to 7 hours	8 to 9 hours	10 to 11 hours	12 to 19 hours	20 hours or more
Mother	1	2	3	4	5	6	7	8	9	10

How much does your father know about using the following features?

Cell Phones		He Doesn't know		He knows a little		He knows a lot	
1	Checking email	1	2	3	4	5	
2	Taking a picture	1	2	3	4	5	
3	Sending a picture message	1	2	3	4	5	
4	Setting up a voicemail	1	2	3	4	5	
5	Recording video	1	2	3	4	5	
6	Sending a video message	1	2	3	4	5	
7	Exchange instant messages	1	2	3	4	5	
Email		He Doesn't know		He knows a little		He knows a lot	
8	Identify Spam	1	2	3	4	5	

	emails					
9	Using instant messaging	1	2	3	4	5
10	Saving an email	1	2	3	4	5
11	Saving contacts	1	2	3	4	5
Social Networking (e.g., Facebook, Twitter, Googe+)		He Doesn't know		He knows a little		He knows a lot
12	Manage privacy settings	1	2	3	4	5
13	Using chat features	1	2	3	4	5
14	Blocking a person	1	2	3	4	5
15	Starting a group	1	2	3	4	5
16	Sending a Tweet	1	2	3	4	5
17	Following someone on Twitter	1	2	3	4	5
18	Make a profile	1	2	3	4	5
		He Doesn't know		He knows a little		He knows a lot
Video Chat (e.g., Skype)						
19	Add contacts or friends	1	2	3	4	5
20	Make a call	1	2	3	4	5
21	Answer a call	1	2	3	4	5
22	Transfer a call	1	2	3	4	5
23	Set "online status" (available, away)	1	2	3	4	5
24	Deny a new	1	2	3	4	5

	contact					
25	Download Skype	1	2	3	4	5
26	Adding or changing picture	1	2	3	4	5
27	Online voicemail	1	2	3	4	5
28	Calling landlines or cell phones from Skype	1	2	3	4	5

3. During the last week how much total time did you spend interacting (face-to-face, online, texting, over the phone) with your father?

	0 minutes	1 to 30 minutes	31 minutes to 1 hour	2 to 3 hours	4 to 5 hours	6 to 7 hours	8 to 9 hours	10 to 11 hours	12 to 19 hours	20 hours or more
Father	1	2	3	4	5	6	7	8	9	10

4. How much of this interaction time with your father during the last week did you feel open to talk about things that are important to you, safe to ask questions, or like you could discuss things that you would not want any other person to know?

	0 minutes	1 to 30 minutes	31 minutes to 1 hour	2 to 3 hours	4 to 5 hours	6 to 7 hours	8 to 9 hours	10 to 11 hours	12 to 19 hours	20 hours or more
Father	1	2	3	4	5	6	7	8	9	10

5. In general, indicate how together, close, and connected you feel with your FATHER when you spend time with him using the following interaction opportunities:

	NA	Not Together		A little Together		Together	
Face-to-face	0	1	2	3	4	5	
Texting	0	1	2	3	4	5	

Skype	0	1	2	3	4	5
Talking on the phone	0	1	2	3	4	5
Social Networking (Facebook, MySpace)	0	1	2	3	4	5
Email	0	1	2	3	4	5

6. **Everyone has different preferences for interaction. Thinking back to interactions you had with your parents during the LAST WEEK indicate your own preferred way of interacting with your mother and father. Then specify what you think your parent's preference would be for interacting with you.**

	Face-to-face	Texting	Skype	Talking on the phone	Social Networking	Email
My preferences for interacting with:						
Mother	1	2	3	4	5	6
Father	1	2	3	4	5	6
Mother's preference for interacting with me	1	2	3	4	5	6
Father's preference for interacting with me	1	2	3	4	5	6

Directions							
Circle "yes" for topics you have discussed with your parents during the last 4 weeks, and "no" for topics that have not come up. For each issue answered "yes," circle a number between 1 (calm) and 5 (angry) to answer the question, "How did you feel when you discussed the topic.							

				How did you feel when you discussed this topic?			
Have you discussed the following with your MOTHER?			**Calm**		**A little angry**		**Angry**
1.	Phone calls	Yes	No	1	2	3	4	5
2.	Sleep habits	Yes	No	1	2	3	4	5
3.	Texting	Yes	No	1	2	3	4	5
4.	Doing homework	Yes	No	1	2	3	4	5
5.	Borrowing money from parents	Yes	No	1	2	3	4	5
6.	Time spent watching T.V.	Yes	No	1	2	3	4	5
7.	Cleanliness (showers, brushing teeth, apartment, room).	Yes	No	1	2	3	4	5
8.	Which clothes to wear (including how orderly and clean they look)	Yes	No	1	2	3	4	5
9.	Facebook (time spent, pictures, postings)	Yes	No	1	2	3	4	5
10.	Manners and respectful behaviors	Yes	No	1	2	3	4	5
11.	Conflict with brothers and sisters	Yes	No	1	2	3	4	5
12.	Swearing/Cursing	Yes	No	1	2	3	4	5
13.	How money is spent	Yes	No	1	2	3	4	5
14.	Movie, book, and music preferences	Yes	No	1	2	3	4	5
15.	Allowance	Yes	No	1	2	3	4	5
16.	Spending time with family	Yes	No	1	2	3	4	5
17.	Church attendance	Yes	No	1	2	3	4	5
18.	Debt (credit cards, loans, etc.)	Yes	No	1	2	3	4	5
19.	Using drugs	Yes	No	1	2	3	4	5
20.	Taking care of personal possessions (cars, electronic devices, and other things).	Yes	No	1	2	3	4	5
21.	Drinking beer or other alcoholic beverages	Yes	No	1	2	3	4	5

				Calm	A little angry		Angry
22.	Buying music, movies, electronic devices, and other things	Yes	No	1	2	3	4	5
23.	Going on dates	Yes	No	1	2	3	4	5
24.	Who friends should be	Yes	No	1	2	3	4	5
25.	Selecting new clothes	Yes	No	1	2	3	4	5
26.	Sex	Yes	No	1	2	3	4	5
27.	Texting/Talking on phone while driving	Yes	No	1	2	3	4	5
28.	Getting to school on time	Yes	No	1	2	3	4	5
29.	Getting low grades in school	Yes	No	1	2	3	4	5
30.	Getting in trouble at school (with the law, with the university)	Yes	No	1	2	3	4	5
31.	Lying	Yes	No	1	2	3	4	5
32.	Physical exercise	Yes	No	1	2	3	4	5
33.	Talking back to parents	Yes	No	1	2	3	4	5
34.	Getting up in the morning	Yes	No	1	2	3	4	5
35.	Bothering parents when they want to be alone	Yes	No	1	2	3	4	5
36.	Bothering you when you want to be left alone	Yes	No	1	2	3	4	5
37.	Being independent	Yes	No	1	2	3	4	5
38.	Decision making	Yes	No	1	2	3	4	5
39.	Time spent using the Internet	Yes	No	1	2	3	4	5
40.	How to spend free time	Yes	No	1	2	3	4	5
41.	Smoking/spit tobacco	Yes	No	1	2	3	4	5
42.	Earning money	Yes	No	1	2	3	4	5
43.	Eating habits	Yes	No	1	2	3	4	5

				How did you feel when you discussed this topic?		
Have you discussed the following with your FATHER?				**Calm**	**A little angry**	**Angry**
1.	Phone calls	Yes	No	1	2	3	4	5
2.	Sleep habits	Yes	No	1	2	3	4	5
3.	Texting	Yes	No	1	2	3	4	5
4.	Doing homework	Yes	No	1	2	3	4	5
5.	Borrowing money from parents	Yes	No	1	2	3	4	5
6.	Time spent watching T.V.	Yes	No	1	2	3	4	5

7.	Cleanliness (showers, brushing teeth, apartment, room).	Yes	No	1	2	3	4	5
8.	Which clothes to wear (including how orderly and clean they look)	Yes	No	1	2	3	4	5
9.	Facebook (time spent, pictures, postings)	Yes	No	1	2	3	4	5
10.	Manners and respectful behaviors	Yes	No	1	2	3	4	5
11.	Conflict with brothers and sisters	Yes	No	1	2	3	4	5
12.	Swearing/Cursing	Yes	No	1	2	3	4	5
13.	How money is spent	Yes	No	1	2	3	4	5
14.	Movie, book, and music preferences	Yes	No	1	2	3	4	5
15.	Allowance	Yes	No	1	2	3	4	5
16.	Spending time with family	Yes	No	1	2	3	4	5
17.	Church attendance	Yes	No	1	2	3	4	5
18.	Debt (credit cards, loans, etc.)	Yes	No	1	2	3	4	5
19.	Using drugs	Yes	No	1	2	3	4	5
20.	Taking care of personal possessions (cars, electronic devices, and other things).	Yes	No	1	2	3	4	5
21.	Drinking beer or other alcoholic beverages	Yes	No	1	2	3	4	5
22.	Buying music, movies, electronic devices, and other things	Yes	No	1	2	3	4	5
23.	Going on dates	Yes	No	1	2	3	4	5
24.	Who friends should be	Yes	No	1	2	3	4	5
25.	Selecting new clothes	Yes	No	1	2	3	4	5
26.	Sex	Yes	No	1	2	3	4	5
27.	Texting/Talking on phone while driving	Yes	No	1	2	3	4	5
28.	Getting to school on time	Yes	No	1	2	3	4	5
29.	Getting low grades in school	Yes	No	1	2	3	4	5
30.	Getting in trouble at school (with the law, with the university)	Yes	No	1	2	3	4	5
31.	Lying	Yes	No	1	2	3	4	5
32.	Physical exercise	Yes	No	1	2	3	4	5
33.	Talking back to parents	Yes	No	1	2	3	4	5
34.	Getting up in the morning	Yes	No	1	2	3	4	5

35.	Bothering parents when they want to be alone	Yes	No	1	2	3	4	5
36.	Bothering you when you want to be left alone	Yes	No	1	2	3	4	5
37.	Being independent	Yes	No	1	2	3	4	5
38.	Decision making	Yes	No	1	2	3	4	5
39.	Time spent using the Internet	Yes	No	1	2	3	4	5
40.	How to spend free time	Yes	No	1	2	3	4	5
41.	Smoking/spit tobacco	Yes	No	1	2	3	4	5
42.	Earning money	Yes	No	1	2	3	4	5
43.	Eating habits	Yes	No	1	2	3	4	5

Directions: **The question first asks you to circle the best answer of what your parents "think they know" about each category and then you are given an opportunity to circle how much they "really know."**

How much does your Mother know about…

	She Doesn't know		She knows a little		She Doesn't know
1. Where you go at night					
Thinks she knows	1	2	3	4	5
Really Knows	1	2	3	4	5
2. How you spend your money					
Thinks she knows	1	2	3	4	5
Really Knows	1	2	3	4	5
3. What you do with your free time					
Thinks she knows	1	2	3	4	5
Really Knows	1	2	3	4	5
4. Who your friends are					
Thinks she knows	1	2	3	4	5
Really Knows	1	2	3	4	5
5. About your drug/alcohol use					
Thinks she knows	1	2	3	4	5

Really Knows	1	2	3	4	5

6. About your sexual behavior

Thinks she knows	1	2	3	4	5
Really Knows	1	2	3	4	5

7. What you do online

Thinks she knows	1	2	3	4	5
Really Knows	1	2	3	4	5

8. How much time you spend with media and technology

Thinks she knows	1	2	3	4	5
Really Knows	1	2	3	4	5

How much does your father know about…

	He Doesn't know		He knows a little		He Doesn't know
9. Where you go at night					
Thinks he knows	1	2	3	4	5
Really Knows	1	2	3	4	5
10. How you spend your money					
Thinks he knows	1	2	3	4	5
Really Knows	1	2	3	4	5
11. What you do with your free time					
Thinks he knows	1	2	3	4	5
Really Knows	1	2	3	4	5
12. Who your friends are					
Thinks he knows	1	2	3	4	5
Really Knows	1	2	3	4	5
13. About your drug/alcohol use					
Thinks he knows	1	2	3	4	5
Really Knows	1	2	3	4	5

14. About your sexual behavior

Thinks he knows	1	2	3	4	5
Really Knows	1	2	3	4	5

15. What you do online

Thinks he knows	1	2	3	4	5
Really Knows	1	2	3	4	5

16. How much time you spend with media and technology

Thinks he knows	1	2	3	4	5
Really Knows	1	2	3	4	5

Directions: **You will be asked where you learned about different technologies. Circle all of the people or places that apply in questions 1-4.**

1. Where did you learn about using a cell phone?

I haven't learned about this technology	Peers	Parents	Self-taught	Internet	A class	Older siblings	Younger siblings	Extended family	Other: _____

2. Where did you learn about using email?

I haven't learned about this technology	Peers	Parents	Self-taught	Internet	A class	Older siblings	Younger siblings	Extended family	Other: _____

3. Where did you learn about using social networking sites?

I haven't learned about this technology	Peers	Parents	Self-taught	Internet	A class	Older siblings	Younger siblings	Extended family	Other: _____

4. Where did you learn about using video chat (Skype)?

I haven't learned about this technology	Peers	Parents	Self-taught	Internet	A class	Older siblings	Younger siblings	Extended family	Other: _____

5. Please select of the following
   What source would you most likely consult to learn about a new technology?

I haven't learned about this technology	Peers	Parents	Self-taught	Internet	A class	Older siblings	Younger siblings	Extended family	Other: _____

Thank you for taking the time to complete this questionnaire. Your participation is greatly appreciated.

Appendix C

Parent Questionnaire

Parent Questionnaire

Directions: **Please circle or fill in your response to the following questions.**

1.	Your student's A#:_____									
2.	**Select your Gender : Male Female**									
3.	Your month of birth?	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep Oct Dec

4. Your birth year :_____

5.	Do you consider yourself	White/Anglo	Asian	Native American	African-American	Hispanic/ Latino Other ____
6.	Which best describes your marital status	Single	Married	Cohabiting	Dating/Engaged	
7.	Which best describes your level of education	High School Graduate	Some College	A bachelors degree	Post Bachelor Degree	Other: _____

8.   Thinking about the last week how much time have you spent using the following technology:

	0 hours	1 to 2 hours	3 to 4 hours	5 to 6 hours	7 to 8 hours	9 to 10 hours	11-12 hours	13-19 hours	20 hours or more
Cell Phone (e.g. talking, texting, internet)	1	2	3	4	5	6	7	8	9
Emailing	1	2	3	4	5	6	7	8	9
Social Networking (e.g., facebook, twitter, Google +)	1	2	3	4	5	6	7	8	9
Video Chat (SKYPE)	1	2	3	4	5	6	7	8	9

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How much do you know about using the following features?

Cell Phones		I Don't know		I Know a little		I Know a lot	
1	Checking email	1	2	3	4	5	
2	Taking a picture	1	2	3	4	5	
3	Sending a picture message	1	2	3	4	5	
4	Setting up a voicemail	1	2	3	4	5	
5	Recording video	1	2	3	4	5	
6	Sending a video message	1	2	3	4	5	
7	Exchange instant messages	1	2	3	4	5	

Email		I Don't know		I Know a little		I Know a lot	
8	Identify Spam emails	1	2	3	4	5	
9	Using instant messaging	1	2	3	4	5	
10	Saving an email	1	2	3	4	5	
11	Saving contacts	1	2	3	4	5	
Social Networking (e.g., Facebook, Twitter, Googe+)		I Don't know		I know a little		I know a lot	
12	**Manage privacy settings**	**1**	**2**	**3**	**4**	**5**	
13	Using chat features	1	2	3	4	5	

		I don't know		I know a little		I know a lot
14	Blocking a person	1	2	3	4	5
15	Starting a group	1	2	3	4	5
16	Sending a Tweet	1	2	3	4	5
17	Following someone on Twitter	1	2	3	4	5
18	Make a profile	1	2	3	4	5

Video Chat (e.g., Skype)		I don't know		I know a little		I know a lot
19	Add contacts or friends	1	2	3	4	5
20	Make a call	1	2	3	4	5
21	Answer a call	1	2	3	4	5
22	Transfer a call	1	2	3	4	5
23	Set "online status" (available, away)	1	2	3	4	5
24	Deny a new contact	1	2	3	4	5
25	Download Skype	1	2	3	4	5
26	Adding or changing picture	1	2	3	4	5
27	Online voicemail	1	2	3	4	5
28	Calling landlines or cell phones from Skype	1	2	3	4	5

Appendix D

IRB Approval Letter

Institutional Review Board
USU Assurance: FWA#00003308
Exemption #2
Certificate of Exemption

FROM: Richard D. Gordin, Acting IRB Chair
True M. Rubal, IRB Administrator

To:Randall Jones, John Vaterlaus
Date:February 09, 2012
Protocol #:4228

Title:Perceptions Of A Digital Divide Between Parents And Emerging Adults

The Institutional Review Board has determined that the above-referenced study is exempt from review under federal guidelines 45 CFR Part 46.101(b) category #2:
Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (a) information obtained is recorded in such a manner that human subjects can be identified, directly or through the identifiers linked to the subjects: and (b) any disclosure of human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

This exemption is valid for three years from the date of this correspondence, after which the study will be closed. If the research will extend beyond three years, it is your responsibility as the Principal Investigator to notify the IRB before the study's expiration date and submit a new application to continue the research. Research activities that continue beyond the expiration date without new certification of exempt status will be in violation of those federal guidelines which permit the exempt status.

As part of the IRB's quality assurance procedures, this research may be randomly selected for continuing review during the three year period of exemption. If so, you will receive a request for completion of a Protocol Status Report during the month of the anniversary date of this certification.

In all cases, it is your responsibility to notify the IRB prior to making any changes to the study by submitting an Amendment/Modification request. This will document whether or not the study still meets the requirements for exempt status under federal regulations.

Upon receipt of this memo, you may begin your research. If you have questions, please call the IRB office at (435) 797-1821 or email to irb@usu.edu.

The IRB wishes you success with your research.

Appendix E

Participant Information Letters

UtahState University

Department of Family, Consumer and
Human Development
2905 Old Main Hill
Logan UT 84322-2905
Telephone: (435) 797-1501

*Full
AAHRPP*

LETTER OF INFORMATION

Late adolescents' perceptions of a digital generation gap and perceived parent-child relations

Introduction/Purpose Randall Jones (Professor in the Department of Family, Consumer and Human Development; Utah State University) and Mitch Vaterlaus (Doctoral Student, Department of Family, Consumer, and Human Development; Utah State University) are conducting a research study to find out more about interactive technology use and its influence on family relationships. You have been asked to take part because the focus of the study is on college students. There will be approximately 800 total participants in this research.

Procedures If you agree to participate in this research study, you will complete an online questionnaire on a secure website. You will respond to questions about your use of technology, perceptions of other family members technology use, and about interactions with your parents. Participation will require 20-30 minutes of your time.

Risks Participation in this research study may involve some added risks or discomforts. Risks involved in the study will be no greater than those encountered in daily life or during performance of routine physical or psychological examinations or tests. Some of the questions may be uncomfortable to answer. There is a small risk of loss of confidentiality but we will take steps to reduce that risk as described below.

Benefits No direct benefits are likely from participating in this study; however, researchers hope to better understand the influence of technology on family relationships and interaction.

Compensation You will be asked to include your student identification number and instructors last name to reward your completion of the questionnaire. This information will be removed from your survey responses and forwarded to your course instructor. Upon completion of the questionnaire you will be receiving extra credit or assignment credit (depending on professor's preference) for your participation in this study.

Voluntary nature of participation and right to withdraw without consequence Participation in research is entirely voluntary. You may refuse to participate or withdraw at any time without consequence. Other assignments requiring the same time and effort are available for obtaining credit or extra credit in the case that instructors are awarding credit for participation.

Confidentiality Research records will be kept confidential, consistent with federal and state regulations. Only the investigator and his graduate researcher will have access to the data which will be kept on a password protected computer in a locked room. To protect your privacy, personal, identifiable information will be removed from study documents and replaced with a study identifier.

UtahState University

Department of Family, Consumer and
Human Development
2905 Old Main Hill
Logan UT 84322-2905
Telephone: (435) 797-1501

LETTER OF INFORMATION
Late adolescents' perceptions of a digital generation gap and perceived parent-child relations

IRB Approval Statement The Institutional Review Board for the protection of human participants at Utah State University has approved this research study. If you have any questions or concerns about your rights or a research-related injury and would like to contact someone other than the research team, you may contact the IRB Administrator at (435) 797-0567 or email irb@usu.edu to obtain information or to offer input.

Investigator Statement "I certify that the research study has been explained to the individual, by me or my research staff, and that the individual understands the nature and purpose, the possible risks and benefits associated with taking part in this research study. Any questions that have been raised have been answered."

Signature of Researcher(s)

Randall M. Jones, Ph.D.
Principal Investigator
(435) 797-1553
r.jones@usu.edu

J. Mitch Vaterlaus, M.S.
Graduate Researcher
(435) 760-7908
mitch.v@aggiemail.usu.edu

UtahState University

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Human Development
2905 Old Main Hill
Logan UT 84322-2905
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LETTER OF INFORMATION
Late adolescents' perceptions of a digital generation gap and perceived parent-child relations

Introduction/Purpose Randall Jones (Professor in the Department of Family, Consumer and Human Development; Utah State University) and Mitch Vaterlaus (Doctoral Student, Department of Family, Consumer, and Human Development; Utah State University) are conducting a research study to find out more about interactive technology use and its influence on family relationships. You have been asked to take part because the focus of the study is on college students and their parents. There will be approximately 1600 total participants in this research.

Procedures If you agree to participate in this research study, you will complete an online questionnaire on a secure website. You will respond to questions about your use of technology, perceptions of other family members technology use, and about interactions with your college student. Participation will require approximately 20 minutes of your time.

Risks Participation in this research study may involve some added risks or discomforts. Risks involved in the study will be no greater than those encountered in daily life or during performance of routine physical or psychological examinations or tests. Some of the questions may be uncomfortable to answer. There is a small risk of loss of confidentiality, but we will take steps to reduce that risk as described below.

Benefits No direct benefits are likely from participating in this study; however, researchers hope to better understand the influence of technology on family relationships and interaction.

Compensation You will be asked to include your college student's identification number. This information will be removed from your survey responses and forwarded to your student's course instructor. Upon completion of the questionnaire your student will be receiving extra credit or assignment credit (depending on professor's preference) for your participation in this study.

Voluntary nature of participation and right to withdraw without consequence Participation in research is entirely voluntary. You may refuse to participate or withdraw at any time without consequence. Other assignments requiring the same time and effort are available to your student for obtaining credit or extra credit in the case that instructors are awarding credit for participation.

Confidentiality Research records will be kept confidential, consistent with federal and state regulations. Only the investigator and his graduate researcher will have access to the data which will be kept on a password protected computer in a locked room. To protect your privacy, personal, identifiable information will be removed from study documents and replaced with a study identifier.

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LETTER OF INFORMATION

Late adolescents' perceptions of a digital generation gap and perceived parent-child relations

your rights or a research-related injury and would like to contact someone other than the research team, you may contact the IRB Administrator at (435) 797-0567 or email irb@usu.edu to obtain information or to offer input.

Investigator Statement "I certify that the research study has been explained to the individual, by me or my research staff, and that the individual understands the nature and purpose, the possible risks and benefits associated with taking part in this research study. Any questions that have been raised have been answered."

Signature of Researcher(s)

Randall M. Jones, Ph.D.
Principal Investigator
(435) 797-1553
r.jones@usu.edu

J. Mitch Vaterlaus, M.S.
Graduate Researcher
(435) 760-7908
mitch.v@aggiemail.usu.edu

v7 2/3/2010

Appendix F

Instructions for Participants

You and your parents are invited to complete an online survey concerning technology and family relationships. The surveys have been approved through Utah State University's Institutional Review Board. The college student survey and parent survey both take approximately 20-30 minutes to complete. I will reward your participation with ___ points for completion of the college student survey and ____ points for the first parent survey(s) completed. The opportunity to participate ends for both surveys Wednesday, February 29th at Midnight.

A full letter of information is available on the first page of the online survey. Please direct any questions about this opportunity to Mitch Vaterlaus (mitch.v@aggiemail.usu.edu).

Instructions for Participation

Use this link to access the surveys:

www.fchdsurvey.com

Select the appropriate survey:

If you are a college student—Student survey

If you are a parent of a college student—Parent survey

The following password is required for both surveys:

<div align="center">Password here</div>

Receiving credit:

You will include A #'s (student identification numbers), course number (course number here), and instructor (instructor name here) name in order to document participation.

Parents will be asked to type in your A #. In order to receive participation points they must include your A# accurately in the text box provided in their survey.

Student ID numbers will be removed from the data after participation is documented in order to provide confidentiality.

CURRICULUM VITAE

J. Mitch Vaterlaus Ph.D., MFTI

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1839 N 200 W   6323 W Baron
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EDUCATION

2012   Ph.D. Family and Human Development, Utah State University. Dissertation: *Late adolescents' perceptions of a digital generation gap and perceived parent-child relations.*

2009   M.S. Family, Consumer, and Human Development. Emphasis: Marriage and Family Therapy, Utah State University. Thesis: *Perceived effectiveness of booster sessions following a stepfamily education program.*

2007   B.S. Psychology, Utah State University.

EMPLOYMENT AND RELATED EXPERIENCE

2010- Present Research Assistant, Department of Family, Consumer, and Human Development, College of Education and Human Services, Utah State University, Kay Bradford Ph.D., Linda Skogrand Ph.D., & Brian Higginbotham Ph.D. (Supervisors). Experience with applied research in Cooperative Extension. Conducted qualitative interviews with couples receiving preventative care. Interaction with Cooperative Extension agents. Opportunity to work on a Government funded grant. 1st (of 4) author on manuscript submitted to *Family Science Review*.

2009- Present Marriage and Family Therapist Intern, LDS Family Services, Logan, Utah. Provided clinical services for individuals, couples, and families. Completed case notes and legal/professional consultations. Participated in weekly supervision with a licensed Marriage and Family Therapist who specializes in working with children and adolescence. Received monthly training from the agency.

2010   Research Assistant, Department of Family, Consumer, and Human Development, College of Education and Human Services, Utah State University, Troy Beckert Ph.D. (Supervisor). Collaboratively wrote and prepared a manuscript for publication. 3rd (of 3) author on manuscript submitted to *Survey Research: Method and Application.*

EMPLOYMENT AND RELATED EXPERIENCE (Continued)

2009-2010   Teaching Assistant, Department of Family, Consumer, and Human Development, College of Education and Human Services, Utah State University. Infancy and Early Childhood. Kaelin Olsen M.S. (Supervisor). Lectured, graded papers, recorded grades, assisted with curriculum development, and facilitated group presentations.

2009   Teaching Assistant, Department of Family, Consumer, and Human Development, College of Education and Human Services, Utah State University. Adolescent Development. Troy Beckert Ph.D. (Supervisor). Lectured, graded papers, assisted with online version of course, and recorded grades.

2008-2009   Teaching Assistant, Department of Family, Consumer, and Human Development, College of Education and Human Services, Utah State University. Research Methodology. Randall Jones Ph.D. (Supervisor). Lectured and graded written assignments.

2008-2009   Research Assistant, Department of Family Research Assistant, Department of Family, Consumer, and Human Development, College of Education and Human Services, Utah State University, Scot Allgood Ph.D. & Brian Higginbotham Ph.D. (Supervisors). Experience with a large Government-funded stepfamily education grant. Collaboratively wrote and prepared a manuscript for publication. 1st (of 3) authors on manuscript accepted for publication in *Social Work with Groups*.

2009   Field Coordinator, Especially for Youth, Church Educational System, Provo, Utah. Managed and supervised week-long camps for 100-500 adolescents and 20-60 staff. Coordinated with different universities, was responsible for safety and discipline of adolescents/staff, prepared and provided trainings, and mentored staff.

2007-2008   Teaching Assistant, Department of Family, Consumer, and Human Development, College of Education and Human Services, Utah State University. Children in the Middle Years. Pam King M.S. (Supervisor). Lectured, prepared exam questions, graded exams and written assignments, and experience with distance education (teaching and grading).

2007   Coordinator, Elementary Core Academy, Utah State University. Coordinated science and math enrichment programs for elementary school teachers with elementary schools throughout Utah. Provided on-site assistance for presenters, school representatives, and participants.

EMPLOYMENT AND RELATED EXPERIENCE (Continued)

2006-2007   Peer Advisor, Department of Psychology, College of Education and Human Services, Utah State University. Advised undergraduates in developing schedules to be eligible for graduation. Assisted professional advisors with academic records and office responsibilities.

2006-2007   Site Coordinator, After School Programming, Logan Parks and Recreation, Logan, Utah. Supervised a program of 40 Kindergarten through fifth graders, staff, and volunteers. Managed registration, site budget, site inventory, and monthly attendance. Provided trainings for staff and interacted with parents daily. Program passed evaluation by Division of Workforce Services with very positive feedback qualifying the site for grant re-funding.

2006   Building Coordinator, Especially for Youth, Church Educational System, Provo, Utah. Supervised 6 to 12 youth counselors and their participants. Provided daily trainings, discipline for counselors and participants, and large group meetings.

2005-2006   Research Assistant, Department of Psychology, College of Education and Human Services, Utah State University. Renee Galliher Ph.D. (Supervisor). Assisted in coding videoed adolescent couple interactions, generated research questions, conducted research project, and presented findings at a professional conference.

2005   Youth Counselor, Especially for Youth, Church Educational System, Provo, Utah. Supervised 12-16 male adolescents in recreational, social, and classroom settings for an overnight youth program. Enforced rules, mentored adolescents, and disciplined as needed.

2004-2006   Youth Leader. After School Programming, Logan Parks and Recreation, Logan, Utah. Provided educational assistance, prepared and taught education/recreational/enriching lessons daily. Assisted in planning and implementing community events for children.

TEACHING EXPERIENCE

2012-present   Adjunct Professor, Department of Family, Consumer, and Human Development, College of Education and Human Services, Utah State University. Human Development Across the Lifespan. Instructing lecture format class (60 freshman and sophomore students).

TEACHING EXPERIENCE (continued)

2012   Graduate Instructor, Department of Family, Consumer, and Human Development, College of Education and Human Services, Utah State University. Marriage and Family Relationships. Instructing lecture format class (200 freshman and sophomore students). Student rating of Instructor effectiveness: 4.7 * Student rating of overall course effectiveness: 4.6 (*new university evaluation system on a 5 point scale).

2011   Graduate Instructor, Department of Family, Consumer, and Human Development, College of Education and Human Services, Utah State University. Human Development Across the Lifespan. Instructing lecture format class (111 freshman and sophomore students). Developed course materials and curriculum with utilization of a new textbook. Student rating of Instructor effectiveness: 4.8 * Student rating of overall course effectiveness: 4.7 (*new university evaluation system on a 5 point scale).

2011   Graduate Instructor, Department of Family, Consumer, and Human Development, College of Education and Human Services, Utah State University. Human Development Across the Lifespan. Instructing lecture format class (150 freshman and sophomore students). Student rating of Instructor effectiveness: 5.6 (5.4 College average) Student rating of overall course effectiveness: 5.5 (5.3 College average)

2010   Graduate Instructor, Department of Family, Consumer, and Human Development, College of Education and Human Services, Utah State University. Human Development Across the Lifespan. Instructing lecture format class (180 freshman and sophomore students). Student rating of Instructor effectiveness: 5.7 (5.4 College average) Student rating of overall course effectiveness: 5.6 (5.3 College average)

2008-Present Invited Presenter, Logan Parks and Recreation, Logan, Utah. Provided 11 one-hour presentations for after school programming staff and employees ($n = 15$ to 90; 450 total people served). Research and experiential activities were used to teach topics including: preparing enriching activities in after school programming, positive discipline and large group management in after school programming, communication with co-workers, communication with children and parents, and collaboration and team-work. Qualitative and Quantitative participant feedback indicated training effectiveness and satisfaction.

MANUSCRIPTS (Submitted)

Beckert, T. E., Lee, C., & Vaterlaus, M. Cognitive autonomy in adolescence: A comparison of American and Taiwanese adolescents. Submitted to: *Survey Research: Method and Application*.

Jones, R. M., Vaterlaus, J. M., & Jackson, M. A. Behavioral residue: Adolescent possessions as a window to identity. Submitted to: *Journal of Personality and Social Psychology*.

Jones, R. M., Vaterlaus, J. M., & Jackson, M. A. Friendship characteristics, psychosocial development, and adolescent identity formation. Submitted to: *Youth and Society*.

MANUSCRIPTS (Revise and Resubmit)

Vaterlaus, J. M., Bradford, K., Skogrand, L., & Higginbotham, B. J. Providing Relationship education for low-income and diverse audiences: A phenomenological investigation. Submitted to: *Family Science Review*.

PEER REVIEWED PUBLICATIONS

Vaterlaus, J. M., Beckert, T. E., Fauth, E., & Teemant, B. (In press). An examination of the influence of clicker technology on college student involvement and recall. *International Journal of Teaching and Learning in Higher Education.*

Vaterlaus, J. M., Allgood, S. M., & Higginbotham, B. J. (2012). Stepfamily education booster sessions. *Social Work with Groups*, 53, 150-163. doi: 10.1080/01609513.2011.599017

Vaterlaus, J. M., & Higginbotham, B. J. (2011). Qualitative program evaluation methods. *The Forum for Family and Consumer Issues* [on-line], *16*(1)*.*

PROFESSIONAL PRESENTATIONS

Vaterlaus, J. M., Bradford, K., Skogrand, L., & Higginbotham, B. J. (2012, November). *Providing relationship education for low income and diverse audiences*. Poster accepted for presentation at the National Council on Family Relations Annual Conference, Phoenix, AZ.

Vaterlaus, J. M., Bradford, K., Skogrand, L., & Higginbotham, B. J. (2012, April). *Providing relationship education for low income and diverse audiences*. Intermountain Graduate Research Symposium, Logan, UT.

PROFESSIONAL PRESENTATIONS (Continued)

Beckert, T., Tulane, S., & Vaterlaus, J. M. (2012, March). *Adolescent perceptions of acceptable and appropriate texting behaviors as a form of social communication.* Society for Research on Adolescence Biannual Meeting, Vancouver, British Columbia, Canada.

Tulane, S., & Vaterlaus, J. M. (2012, January). *Student perceptions of text messaging in school contexts.* Hawaii International Conference on Education, Honolulu, Hawaii.

Vaterlaus, J. M., Skogrand, L., & Bradford, K. (2011, March). *Providing couple and relationship education for low-income and diverse audiences: Preliminary findings.* Intermountain Graduate Research Symposium. Logan, UT.

Higginbotham, B. J., Skogrand, L., Bradford, K., & Vaterlaus, J. M. (2011, March). *Couple and relationship education.* Utah State University Extension Annual Conference. Logan, UT.

Vaterlaus, J. M., Allgood, S. M., Higginbotham, B. J., & Morrill, P. (2011, May). *Stepfamily education booster sessions.* Office of Family Assistance Grantee Annual Meeting, Baltimore, MD.

Teemant, B., Vaterlaus, M., & Beckert, T. (2011, March). *Using clicker technology to increase student recall and metacognition.* Scholarship of Teaching and Engagement Conference, Orem, UT.

Teemant, B., Vaterlaus, M., & Beckert, T. (2011, February). *Using clicker technology to increase student recall and metacognition.* American Association of Behavioral and Social Sciences, Las Vegas, NV.

Vaterlaus, J. M., Allgood, S. M., & Higginbotham, B. J. (2010, November). *Perceived effectiveness of booster session following a stepfamily education course.* National Council on Family Relations Annual Conference, Minneapolis, MN.

Vaterlaus, J. M., Ashby, S., & Gardner, J. (2006, April). *Adolescent romantic couples' party planning: Associations with media portrayals.* Rocky Mountain Psychology Association Conference, Park City, UT.

GRANT EXPERIENCE

Reck, K., & Vaterlaus, J. M. (2010). "Operation Ranger Grant: Downey Fire District" submitted to Gifts in Kind International, in Alexandria, VA on January 29, 2010. Not funded ($9,799).

GRANT EXPERIENCE (continued)

Vaterlaus, J. M., & Reck, K. (2010). *"Compressed Air Foam System: Downey Fire District"* submitted to Idaho Community Foundation in Boise, ID on April 1, 2010. Not funded ($4,604).

EXTENSION PUBLICATIONS

    a. Refereed Fact Sheets

Vaterlaus, J. M., & Higginbotham, B. J. (2011). *Writing survey questions for local program evaluations.* FC/Evaluation/2011-02 pr. Logan, UT: Utah State University.

Vaterlaus, J. M., & Higginbotham, B. J. (2011). *Planning a program evaluation: An introduction for county agents.* FC/Evaluation/2011-01pr. Logan, UT: Utah State University.

    b. Monographs

Vaterlaus, J. M., Skogrand, L., Higginbotham, B. J., & Bradford, K. (2012). *Couples education: 2011.* Utah State Cooperative Extension Publication.

Vaterlaus, J. M., Skogrand, L., Higginbotham, B. J., & Bradford, K. (2011). *Couples education: 2010.* Utah State Cooperative Extension Publication.

CLINICAL EXPERIENCE

Clinical Interests and Expertise: Child and adolescent issues, parenting issues, marital problems, grief, and pornography addiction.

2008-2009	Student Therapist, Family Life Center, Utah State University.
2008-2009	Therapy Student Intern, LDS Family Services, Logan, UT.
2008-2009	Therapy Intern, Family Institute of Northern Utah. Facilitated treatment groups with children who had witnessed domestic violence.
2008-2009	Therapy Intern, Mountain Crest High School, Hyrum, UT. Facilitated treatment groups with high school students who had experienced deaths of immediate family members.

SERVICE

    a. Service to the University

2011- 2012   Committee member, Department Teaching Excellence Award Committee, Utah State University, Logan, UT. Nominated to be on committee to observe, evaluate, and identify the most effective/engaging instructors among all colleges at Utah State University.

    b. Service to the Community

2008-Present   Provided pro-bono trainings, for After School Programming, Logan Parks and Recreation, Logan, UT.

2009-2010   Grant Writer, Downey Volunteer Fire District, Downey, ID. Wrote grants to obtain needed equipment for the volunteer fire department.

AWARDS AND SCHOLARSHIPS

2012   Robins Award finalist, Teaching Assistant of the Year, Utah State University

2012   Research Assistant of the Year, Emma Eccles Jones College of Education and Human Services, Utah State University

2012   Research Assistant of the Year, Department of Family, Consumer, and Human Development, Utah State University

2011-2012   Brent C. and Kevon C. Miller Graduate Student Scholarship

2010-2011   Leah D. Widstoe Scholarship

2010   Travel Award from Utah State School of Graduate Studies

2009-2010   William and Stella Griffiths Scholarship

2008-2009   Dale and Adele Young Scholarship

2008-2009   Family Life Alumni Scholarship

2006   Travel Award from Utah State Psychology Department

2001   Key Club Outstanding Service Award

PROFESSIONAL ORANIZATIONS

2010-Present National Council on Family Relations

2009-Present American Association of Marriage and Family Therapy

2009-Present Utah Association of Marriage and Family Therapy

2006-Present PSI CHI