ADOLESCENTS’ PERCEPTIONS OF
ADOLESCENT-PARENT COMMUNICATION
AND ADOLESCENT TECHNOLOGY USE

by

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>LIST OF TABLES</th>
<th>vi</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF FIGURES</td>
<td>vii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>viii</td>
</tr>
</tbody>
</table>

## Chapter

### 1 INTRODUCTION

Adolescent Development .............................................. 1  
Family Systems Theory .................................................. 2  
Social Domain Theory ................................................... 4  
The Family During Adolescence ....................................... 5  
Adolescent-Parent Communication ................................... 6  
Adolescent Technology Use ............................................ 9  
The Relationship between Technology Use and Adolescent Adjustment ...... 10  
Adolescent-Parent Communication and Adolescent’s Technology Use .......... 13  
Gender Differences .................................................... 17  
  - Adolescent Gender ................................................. 18  
  - Parent Gender ..................................................... 19  
Limitations of the Literature ....................................... 21  
The Present Study ...................................................... 21  

### 2 METHOD

Participants ............................................................. 25  
Measures ................................................................. 26  
  - Technology Use Questionnaire ................................... 26  
  - Adolescent-Parent Communication ................................ 26  
Procedure ...................................................................... 27  

### 3 RESULTS

Analysis ....................................................................... 28  
Descriptive Statistics .................................................. 28
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>Means and Standard Deviations for the Technology Use and Adolescent-Parent Communication Variables at Time 1 by Gender</td>
<td>51</td>
</tr>
<tr>
<td>Table 2</td>
<td>Correlations between the Study Variables at Time 1 by Gender</td>
<td>52</td>
</tr>
<tr>
<td>Table 3</td>
<td>Linear Regression: Predicting Adolescent Technology Use at Time 2 from Adolescent-Parent Communication at Time 1 for Girls</td>
<td>53</td>
</tr>
<tr>
<td>Table 4</td>
<td>Linear Regression: Predicting Adolescent-Parent Communication at Time 2 from Adolescent Technology Use at Time 1 for Girls</td>
<td>54</td>
</tr>
<tr>
<td>Table 5</td>
<td>Predicting Adolescent Technology Use at Time 2 from Adolescent Parent Communication at Time 1 for Boys</td>
<td>55</td>
</tr>
<tr>
<td>Table 6</td>
<td>Linear Regression: Predicting Adolescent-Parent Communication at Time 2 from Adolescent Technology Use at Time 1 for Boys</td>
<td>56</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

Figure 1  Does adolescent-parent communication predict girls’ technology use? .... 58
Figure 2  Does girls’ technology use predict adolescent-parent communication? .... 59
Figure 3  Does adolescent-parent communication predict boys’ technology use? .... 60
Figure 4  Does boys’ technology use predict adolescent-parent communication? .... 61
ABSTRACT

The present study examined the relationship between adolescents’ perceptions of their communication with their parents and their technology use (talking on the phone, texting, emailing/instant messaging). More specifically, this study assessed the longitudinal relationship across two time points between these two variables and whether gender differences exist. The sample included 1,036 tenth and eleventh grade students from the Mid-Atlantic region of the United States. Linear regression models were conducted to examine if adolescent-parent communication predicted later adolescent technology use or if adolescent technology use predicted later adolescent-parent communication. Girls’ communication with their parents predicted more technology use. Further, girls’ technology use predicted more problems in communication and less open communication with their parents. For boys, the pattern was unidirectional as only technology use predicted adolescent-parent communication one year later. Implications and directions for future research are discussed.
Chapter 1

INTRODUCTION

Adolescent Development

Adolescence is a developmental period characterized by youth renegotiating their relationships with their parents and striving for increased autonomy. Further, peers play a more influential role in adolescents’ lives than in earlier ages. Originally, Hall (1904) described adolescence as a period of storm and stress. Later research suggests that adolescence is not just a period of negativity. According to Arnett (1999), adolescents experience conflicts with parents, changes in moods, and engage in risky behaviors. In addition, youth attempt to become independent from their parents during this developmental period. During adolescence, both positive and negative events occur, and youth may experience increased conflict with their parents when beginning to form their own autonomy. Most parents have positive relationships with their adolescents. However, parents now have to compete with the technology that is a growing part of their adolescents’ lives. For example, youth may be using technology to speak with their peers more often; this may widen the gap between themselves and their parents (Subrahmanyam & Greenfield, 2008). Although technology and media have always been involved in adolescents’ lives, they play an even bigger role today. Parents already have to address the changes in their relationship with their adolescents, as their children’s peers become a higher priority;
in addition, parents now have to account for the role that technology plays in their adolescents’ lives (Subrahmanyam & Greenfield, 2008).

Now that technology has become so salient in adolescents’ lives, it is speculated that it could be more difficult for parents to engage in open and honest communication with their children. Parents may have to compete with their adolescents spending more time with their peers and their adolescents’ increasing technology use. Limited research is available on how the addition of technology to adolescents’ lives affects the overall family dynamic and the adolescent-parent relationship. The current research examines the relationship between adolescent-parent communication and adolescent technology use.

As adolescents become quick and intuitive technology users and become more independent from their parents, what is the relationship between their perceptions of their communication with their parents and their technology use? Two theories are particularly useful when examining adolescent technology use and adolescent-parent communication: family systems theory and social domain theory.

**Family Systems Theory**

Family systems theory considers the family as a complex system, but also focuses specifically on the interactions within the family’s dyads. Cox and Paley (1997) discuss four principles of family systems theory – wholeness and order, hierarchical structure, adaptive self-stabilization, and adaptive self-organization. In order to understand the family, one has to consider not just the individual relationships but also the context of the entire network. Furthermore, the family needs to be viewed
as a hierarchical structure (Cox & Paley, 1997). Within the family, different subsystems exist, such as parental or sibling, but these subsystems need to co-exist within a larger system. Boundaries are determined among the different systems; this makes it easier for family members to interact in these smaller subsystems without interference but also allows them to reach out to other family members if needed. Adaptive self-stabilization and self-organization refers to two ways of responding to external influences on the family (Cox & Paley, 1997). Adaptive self-stabilization gives the family the resources needed to readjust when something in the environment changes, such as when family members deviate from predetermined boundaries (Cox & Paley, 1997). Adaptive self-organization refers to the reorganization process families must undergo when external influences change the family system (Cox & Paley, 1997).

Using family systems theory is helpful in understanding the relationship between adolescent-parent communication and adolescent technology use. Perhaps adaptive self-organization occurs more often in a family where adolescents are more frequent users of technology as opposed to a family where adolescents do not use technology as frequently. Families must readjust when external factors change the family system. Since technology is important for today’s youth, the family has to account for this new shift. Before, the family had to account for the increasingly important and active role of peers in their adolescents’ lives. However, today technology is another factor that can potentially impact the family. The application of family systems theory is useful in examining this relationship because it specifically
focuses on the family and how it readjusts and reorganizes when external influences (i.e., technology) are introduced.

**Social Domain Theory**

Social domain theory (Smetana, Metzger, Gettman, & Campione-Barr, 2006) suggests that adolescents have multiple social interactions that lead them to acquire certain domains of social knowledge. More specifically, adolescents have clear boundaries about their moral, conventional, and personal issues (Smetana, Crean, & Campione-Barr, 2005); adolescents feel they have the right to regulate what issues they can discuss with their parents. Moral issues pertain to laws and welfares of others, and conventional issues refer to the arbitrary norms that dictate our interactions with other individuals (Smetana et al., 2005). Adolescents tend to feel they do not need to discuss personal issues, like their friendships, bodies, or even recreational/lifestyle choices with their parents (Smetana et al., 2006).

Because adolescents are unlikely to engage in discussions with their parents about personal issues, boundaries between parents and youth emerge. A personal issue for an adolescent may be considered to be a prudential or conventional issue for a parent; this inconsistency leads to multifaceted issues. For example, an adolescent’s room may have been a prudential issue, an issue of comfort or safety (Smetana et al., 2005), but now it may have become a personal issue. Adolescents may view their rooms as being a part of their own private space, where parents do not have any control. However, from the parents’ perspective, the adolescent’s room is still a prudential issue because the room is in the parent’s house and the parent thinks the
room should be clean. This conflict may cause tension in the relationship and communication between adolescents and parents as both have different opinions. In addition, parents believe they have more control over personal and multifaceted issues than adolescents wish; this leads to parents believing adolescents must disclose more to them. Previous research indicates adolescents and parents do agree that parents should have control over moral, conventional, and prudential issues, as adolescents believe they are obligated to disclose these issues to their parents (Smetana et al., 2006). For the present study, using social domain theory will be helpful in examining how adolescents may categorize their technology use.

The Family During Adolescence

When a child becomes an adolescent, there are shifts in family dynamics. In addition to their parents, adolescents now have multiple influences in their lives such as peers and the media (Smetana et al., 2006). This developmental stage is divided into three periods, early (10-13 years old), middle (14-17 years old) and late adolescence (18-early 20s). Most conflict with parents occurs during early adolescence and eventually stabilizes in later adolescence (Smetana et al., 2006). Ultimately, the latest research rejects Hall’s (1904) idea of “storm and stress.” Previous research would suggest the norm for all adolescents is to experience extreme emotional despair and high conflict with their parents; instead, this is an anomaly and most adolescents do not have such a tumultuous experience (Collins & Laursen, 2004).

However, parents of adolescents may experience extraordinary stress during their children’s second decade of life (Buchanan, Eccles, Flanagan, Midgley,
Feldlaufer, & Harold, 1990). Both parents and adolescents have to renegotiate their relationship and the adolescent-parent relationship changes from being hierarchical to more egalitarian towards the end of adolescence (Youniss & Smollar, 1985). As adolescents spend more time with their peers and continue to find their own niches (Larson, Richards, Moneta, Holmbeck, & Duckett, 1996), research has shown adolescents’ perceptions of support, closeness, intimacy, and the cohesion of the adolescent-parent relationship noticeably declines during early adolescence (Furman & Buhrmester, 1985). This decline is coupled with a rise in conflict between early adolescents and their parents. However, these perceptions improve towards the end of adolescence (Dubas & Petersen, 1996).

Adolescents’ relationships with their parents differ across many contexts. For example, adolescents tend to discuss certain issues with their parents. Furman and Buhrmester (1985) found adolescents are closer to their mothers than fathers. Although social domain theory suggests adolescents refrain from discussing personal issues with their parents (Smetana et al., 2006), studies show adolescents do talk with their mothers about dating and sexual issues (Larson & Richards, 1994). On the other hand, adolescents are likely to discuss conventional and prudential issues with both parents (Smetana et al., 2006). More research needs to include the father when applicable.

**Adolescent-Parent Communication**

As previously stated, adolescence is a time period when adolescents learn to become independent of their parents (Erikson, 1968; Larson, Richards, Moneta,
Holmbeck, & Duckett, 1996). As such, adolescents’ time spent with the family begins to decline during early adolescence (Larson et al., 1996). Previous research suggests adolescents do not pull away from the family due to the quality of the relationships, but adolescents simply just spend more time away from home, through becoming involved with other microsystems, such as their school and peers (Larson et al., 1996).

As youth spend more time away from the family home, parents find it more difficult to monitor what their adolescents are doing. This creates friction in the adolescent-parent relationship, as adolescents believe they should decide what they do and do not have to tell their parents. A new issue of disclosure and secrecy emerges. For example, an adolescent female may tell her parents she has a new boyfriend (disclosure) but may fail to tell them she has already had sex with him (secrecy). In the literature, disclosure and secrecy are used interchangeably but research conducted by Smetana et al. (2006) suggests they are two independent, but closely related constructs.

Stattin and Kerr (2000) and Kerr and Stattin (2000) found that parents asking their children, children’s friends, friends’ parents about their children’s activities (solicitation) and child disclosure accounted for the most frequent ways parents received their information about their adolescents’ activities. However, both studies mentioned the same confounding variable – that the parents might already have had successful, positive relationships with their adolescents that influenced them to disclose more often.
Adolescents feel more obligated to disclose information to their parents about prudential, conventional, and moral issues, but less likely to disclose information about multifaceted or personal issues (Smetana et al., 2005). Ultimately, trust facilitates adolescents’ inclination of disclosing anything to their parents; this could be related to a stronger adolescent-parent relationship. If the quality of the adolescent-parent relationship is positive, adolescents might be more forthcoming about all issues (Smetana et al., 2006). Alternatively, those parents who exhibit more control and are more adamant about what their adolescent discloses to them may have youth who will talk openly to them about personal or multi-faceted issues (Smetana et al., 2006).

Conversely, secrecy is normally associated with negative outcomes, such as depression and loneliness (Finkenauer, Engels, & Meeus, 2002). Related to social domain theory, some research suggests secrecy actually helps adolescents develop their own autonomy and independence as they decide what issues they tell their parents and what issues they keep to themselves.

According to Erikson (1968), adolescents are seemingly obsessed with how others perceive them. Coupled with this notion, adolescents must establish their own personal identities in order to avoid role diffusion or identity confusion. Adolescents must answer questions like, “Who am I?” or “Where am I going?” Ultimately, the self-concept of identity materializes through peer interactions (Erikson, 1968). This theory can be linked to Finkenauer, Engels, and Meeus’s (2002) study, where adolescents who engaged in secrecy became emotionally autonomous and helped them in their identity achievements. This developmental period can have implications when
facing the central crisis of Intimacy versus Isolation during young adulthood. If adolescents do not reach identity achievement, it can result in a more difficult transition into young adulthood (Arnett, 2010).

**Adolescent Technology Use**

During adolescence, adolescents have to renegotiate their roles and relationships within the family. In today’s world technology has become another important context in adolescents’ lives. Technology use has increased steadily over the last ten years for adolescents (Pew Internet and American Life Project, 2009). Naturally, as technology continues to improve and progress, adolescents have more technological choices than just a telephone or a radio. In fact, now a cell phone is not just a singular device as its capabilities also include the Internet, music, and text messaging. According to the Pew Internet and American Life Project (2009), cell phone usage has increased from forty-five percent in 2004 to seventy-five percent in 2009. In addition, surfing the Internet, texting, and listening to an iPod/MP3 player has increased exponentially in the last few years (Pew Internet and American Life Project, 2009). As technology moves forward each day, researchers are having difficulty staying current with what technology adolescents are using.

Despite these constant changes, there have been some consistent findings regarding technology use (Gross, 2004). Longitudinal research designs are being used more often to show trends in technology use (Willoughby, 2008; Witt, Massman, & Jackson, 2011). Gross (2004) found ninety-one percent of participants used the Internet at home. Interestingly, when asked how long participants had been using
Internet in their homes, boys reported using the Internet longer than girls. Likewise, Willoughby (2008) found about ninety-four percent of boys and girls spent time online. Adolescents are more likely to use the Internet more frequently if they had strong friendships but less positive parental relationships (Willoughby, 2008).

Overall, adolescents seem to increase their computer and technology use but decrease their videogame playing between early and late high school (Willoughby, 2008; Witt, Massman, & Jackson, 2011). In addition, boys and girls’ online activities seem to become more similar over time (Gross, 2004). However, some research suggests a different pattern. For example, in a study of gender differences in cell phone, computer and Internet use with a sample of middle adolescents (fifteen and sixteen year olds), Rees and Noyes (2007) found girls use technology less frequently and had a less favorable attitude towards technology than boys. Finally, Epstein (2012) found boys spent more time on the computer for non-school related activities and played games on the computer longer than girls. These studies alone indicate the importance of gender when examining the relationship between adolescent-parent communication and adolescent technology use.

**The Relationship between Technology Use and Adolescent Adjustment**

Adolescents have the potential to encounter many problems during this developmental period that ultimately affect their adjustment. Changes in adolescents’ attachment security (Allen, Boykin McElhaney, Kuperminc, & Jodl, 2004; Nickerson & Nagle, 2005) and their changing perspectives on their relationships with their parents (Amato & Fowler, 2002; De Goede, Branje, & Meeus, 2009) impact their
psychological adjustment that may lead to problem behaviors, such as deviant behavior or depression.

Attachment has a different meaning in adolescence than childhood. During adolescence, attachment remains relatively stable, but certain factors can influence attachment to decline. In a longitudinal study, Allen, Boykin McElhaney, Kuperminc, and Jodl (2004) found adolescents who were in constant disagreements with their mothers showed lower levels of attachment during the follow-up study two years later. In addition, early adolescents who had less secure attachments used peer relationships to fulfill the lack of a relationship with their parents (Nickerson & Nagle, 2005).

As Nickerson and Nagle (2005) found, early adolescents sought peer relationships to compensate for unfulfilling relationships with their parents, perhaps adolescents would use technology to compensate for this deficiency. Technology use during adolescence has increased exponentially over the past few years (Pew Internet and American Life Project, 2009). As technology plays a larger role in adolescents’ lives, how does this increased usage affect adolescent adjustment? In a study conducted by Mikami et al. (2010), adolescents who were better adjusted during early to middle adolescence were more likely to use social networking sites as young adults. In addition, adolescents’ patterns of peer relationships, friendship quality, and behavioral adjustment at thirteen and fourteen mirrored their social networking usage in these same domains (Mikami et. al, 2010).

In a European sample, Wallenius and Punkamaki (2008) found adolescent-parent communication moderated the relationship between digital game violence and
aggression. Poor adolescent-parent communication exacerbated the negative effects digital game violence has during adolescence. However, positive adolescent-parent communication was not an effective protective factor against these externalizing behaviors (Wallenius & Punkamaki, 2008).

Cell phones continue to be salient for adolescents (Pew Internet and American Life Project, 2009). Blair and Fletcher (2010) found cell phones enabled interpersonal connections and resulted in an increase in closeness with friends, organization, and made problem solving between parents and adolescents easier. Acquiring a cell phone is considered a rite of passage and a step towards gaining responsibility and autonomy, as adolescents are not relying on the house telephone (Blair & Fletcher, 2010).

The Internet has become a significant tool in adolescents’ lives as well (Pew Internet and American Life Project, 2009). As conflict increases between adolescents and their parents, these adolescents move to the online world to form online relationships (Wolak, Mitchell, & Finkelhor, 2003). This finding is in contrast to recent research that suggests adolescents’ online lives are merely an extension of their offline lives (Gross, 2004; Mikami et al., 2010). However, Wolak, Mitchell, and Finkelhor (2003) note adolescents who feel disconnected from their parents and are unable to make friends easily may use the Internet as an alternative. As such, adolescents could use the Internet as a means of social support.

Overall, the addition of technology in adolescents’ lives appears to have positive and negative effects. The type of technology should be considered, for example, as cell phones provide some positive effects (Blair & Fletcher, 2010) but
video games seem to result in some negative effects (Wallenius & Punkamaki, 2008). In addition, some research indicates adolescents who use technology more frequently (such as text messaging and emailing/IMing) are more likely to use substances at an earlier age and be more frequent users (Ohannessian, 2009). Conversely, some technology may act as protective factor (Ohannessian, 2009a). For example, boys who played video games or watched television may have lower levels of anxiety; however, the results were opposite for girls (Ohannessian, 2009a). It is important to note these studies used longitudinal designs to examine if any changes happen during early, middle, or late adolescence. However, Blair and Fletcher’s (2010) results should be carefully considered before making grand assumptions. They found cell phones were a positive influence on adolescents’ lives but they used a qualitative research design that is not known for being applicable to the greater population. Even though the sample was drawn from a larger study, it is not known if the results would be different in a more heterogeneous, diverse sample. Due to the inconsistencies of positive and negative effects technology use has on adolescents, additional research is needed to better understand these complex interactions.

**Adolescent-Parent Communication and Adolescent’s Technology Use**

One of the most rapidly growing technologies is the Internet (Pew Internet and American Life Project, 2009). Previous studies on technology have focused on television and the telephone. Now that the Internet plays a huge role in adolescent’s lives (Pew Internet and American Life Project, 2009), how does the Internet impact the family? Adolescents spend more time on the Internet than they do with their
families; however, this increase in time spent on the Internet can have positive or negative implications for the family. In a study of early Korean adolescents, adolescents who played online games resulted in a decrease in time spent with family and communicating with other family members (Lee & Gae, 2007). However, adolescents who used the Internet for educational purposes did not show a decrease in time spent with their families (Lee & Gae, 2007). Instead of examining how the Internet itself influences adolescents to spend less time with the family, one needs to focus on what adolescents are doing on the Internet that could be resulting in this decrease in family time.

How do adolescents benefit from online communication usage? Valkenburg and Peter (2009) propose two hypotheses—the Reduction Hypothesis and the Internet-enhanced Self-Disclosure Hypothesis. The Reduction Hypothesis claims adolescents are motivated to form fake online relationships with strangers that will provide fewer benefits than real-world/offline relationships. This hypothesis may not be relevant now considering the invention and introduction of new communication technologies, such as Instant Messaging (IM) and Facebook, where adolescents mostly communicate with people they know offline (Blinka & Smahel, 2009; Gross, 2004; Mikami et al., 2010). The Internet-enhanced Self-Disclosure Hypothesis claims the Internet can influence increased social-connectedness and well-being offline through online self-disclosure. As hypothesized, adolescents can benefit from online communication as it can increase social-connectedness when adolescents are speaking to friends they already know and have (Valkenburg & Peter, 2009).
In addition to the Internet, researchers have examined parenting style, communication, and adolescent social networking behavior (Rosen, Cheever, & Carrier, 2008). As we know from the offline world, parents are likely to monitor their adolescents’ lives, especially as adolescents attempt to gain independence from their parents (Smetana et al., 2006; Stattin & Kerr, 2000). Rosen, Cheever, and Carrier (2008) found adolescents were actively using MySpace and gaining large numbers of friends, some whom they do not even know. The researchers gave surveys to parents and teen MySpace users at two different time points. Three months passed before the researchers administered the survey a second time. Results indicated parents were unaware of their adolescent’s activities on MySpace. Parents who claimed they knew what their adolescents did on MySpace highly underestimated adolescents’ real activities on the social networking site (Rosen, Cheever, & Carrier, 2008). Most parents were concerned with the possibility of sexual predators contacting their adolescents; when in reality, that rarely happened (Rosen, Cheever, & Carrier, 2008). Although this study may seem outdated due to the decline of the MySpace social networking site, it can still be applied to the various popular social networking sites today.

In addition Rosen, Cheever, and Carrier (2008) found more than one third of the parents had not seen their adolescent’s profile page, half of the parents said they have never looked at the page and between 25-33% of parents were unsure as to what their adolescents disclosed online. Authoritative parenting was associated with fewer
risky online behaviors and these parents were more likely to mediate their adolescent’s usage (Rosen, Cheever, & Carrier, 2008).

Although parents were highly concerned about their adolescents’ MySpace usage, they did not do anything (Rosen, Cheever, & Carrier, 2008). Because MySpace was so new when this study was conducted, parents categorized it with the uncomfortable topics of sex and drugs and did not know how to approach the conversation. This could also stem from adolescents being more comfortable and more frequent users of technology than their parents (Rosen, Cheever, & Carrier, 2008).

Recently, Gentzler, Oberhauser, Westerman, and Nadorff (2011) published a study regarding electronic communication and college students’ relationships with their parents. It was hypothesized immediate communication, such as using the phone, would provide more warmth and support, thereby decreasing loneliness. On the other hand, using electronic communications that delayed this gratification, such as e-mail or social networking sites, would increase feelings of loneliness. Besides examining social networking usage, this study examined attachment between college students and their parents. Those college students who were more anxiously attached were more inclined to reach out to their parents more often.

The results from Gentzler, Oberhauser, Westerman, and Nadorff (2011) showed that college students who had a more securely attached relationship with their parents used the phone more often, whereas those who used social networking sites to communicate with their parents were more anxiously attached and lonely. However, Gentzler, Oberhauser, Westerman, and Nadorff (2011) also found college students
who used social networking sites with their parents had greater overall communication with their parents.

**Gender Differences**

Because the topic of adolescent parent communication and the manner in which it relates to adolescent technology use is still fairly new, a small amount of empirical evidence is available relating to adolescent technology use and adolescent-parent communication. Instead, research has focused on adolescent gender differences in technology. In a study examining Internet, computer game, and video game use, videogame playing was found to be more prevalent for boys than girls (Willoughby, 2008; Witt, Massman, & Jackson, 2011). Girls were more likely than boys to use communication technologies, such as computer use/instant messaging and cell phones (Witt, Massman, & Jackson, 2011). In a qualitative study examining late adolescents and emerging adults’ MySpace use, Manago, Graham, Greenfield, and Salimkhan (2008) found the social networking site reinforced gender identities one would find in the offline world, such as females aimed to be attractive and males focused on their masculinity.

In another longitudinal study that spanned over a twenty-two year period and examined television viewing and aggressive behavior at three different time points, Eron and colleagues (Strasburger, Wilson, & Jordan, 2009) found boys who watched more television violence in early childhood were more likely to be aggressive during adolescence and young adulthood. This relationship was not found for girls. Following up with these same participants at age thirty showed a relationship between exposure
to television violence during childhood and aggression as an adult. Nevertheless, research relating to the broader gender differences between adolescents and parents and how these differences could relate to adolescent technology use is provided below.

Adolescent Gender

According to Galambos, Berenbaum, and McHale (2009) and Su, Rounds, and Armstrong (2009), girls are more relationship oriented, whereas boys are more object oriented. As such, girls may be more likely to gravitate to certain technologies more than boys, such as girls may be more likely than boys to use instant messaging, texting, and/or social networking sites because these technologies are based on relationships. In contrast, boys may be more likely to play video games because it does not require the involvement of other adolescents. Moreover, boys are stronger in spatial and math related activities, which may be required for certain types of video games (Harter, 2006; Hyde, 2005). Research has shown a relationship between spatial skills and video game playing (Subrahmanyam, Greenfield, Kraut, & Gross, 2001).

In a longitudinal study of gender differences in keeping secrets from parents in adolescence, a faster increase in secrecy was found for boys during middle adolescence than girls (Keijsers, Branje, Frijns, Finkenauer, & Meeus, 2010). The authors suggest that the faster increase in secrecy for boys in comparison to girls is due to girls having more of a chance of damaging the quality of the adolescent-parent relationship (Keijsers et al., 2010). Based on social domain theory, even though adolescents do not feel they need to communicate about personal issues, perhaps girls feel more obligated to share personal issues because they have more personal and
intimate relationships. Conversely, boys may not encounter this issue and may be able to keep secrets more often. Also, Keijsers et al. (2010) found an interaction existed between secrecy and poor relationships. Poor relationships between adolescents and parents preceded higher levels of secrecy. For girls, keeping more secrets from parents could be a result of a poor relationship with their parents. These gender differences between adolescents could have implications on how they use technology and communicate with their parents. Perhaps girls and boys use technology more often if they do not have a strong, positive relationship with their parents. Conversely, perhaps girls and boys have more access to technology when they do have a strong, positive relationship with their parents.

Parent Gender

Most prior research has examined parents as a whole and does not separate by gender, but recent research has begun to separate the dyad and examine mothers and fathers (McKinney & Renk, 2008). It is important to include both mothers and fathers since one gender might influence adolescents differently. Role theory suggests mothers and fathers have different parenting responsibilities. Mothers play the caregiver role; fathers play the disciplinarian (Hosley & Montemayor, 1997). Fathers spend less time caring for their children as opposed to mothers (Hosley & Montemayor, 1997). Since mothers are more likely to be the caregiver, they have the closer relationship with their adolescents than fathers (Tein, Roosa, & Michaels, 1994; Williams & Kelly, 2005). In addition, adolescents disclose more to their mothers than their fathers about private issues (Larson & Richards, 1994). Similarly, some research
suggests that adolescents are more likely to emulate their same-sex parent (Bussey & Bandura, 1984).

In addition, these gender differences between parents and their youth may be more prominent during the adolescence stage. According to Smetana et al.’s (2006) social domain theory, boys have more problems than girls with conventional issues, such as chores, and moral issues, such as rules with their mothers (Holmbeck et al., 1995). In addition, boys believe their mothers are more willing to talk to them and are warmer than their fathers. On the other hand, boys view their father as someone they are able to hang out with and who will give them advice (Holmbeck et. al, 1995). Girls view their mothers similarly to boys—they see mothers as being someone they can talk to and who will be supportive of them.

As such, mothers and fathers may have different parenting strategies or different ways to communicate about their adolescents’ technology use (Wang, Bianchi, & Raley, 2005). Sayer, Bianchi, and Robinson (2004) found mothers monitored their children’s Internet use more than their fathers, considering mothers normally spend more time with their children. However, in a study using the 2000 Pew Internet and American Life Project, Wang, Bianchi and Raley (2005) found that fathers were more likely to check the websites their children visited than mothers. This inconsistent finding suggests fathers spend more time on the Internet or have more experience with computers. These inconsistent findings show the need to include both parents, when applicable, in studies regarding adolescent technology use.
Limitations of the Literature

Many limitations exist in the current literature focusing on adolescent-parent communication and adolescent technology use. For example, the few studies that exist use cross-sectional research designs (Holtz & Appel, 2011; Nickerson & Nagle, 2005; Wolak, Mitchell, & Finkelhor, 2003) and lack theoretical frameworks (Amato & Fowler, 2002; Gentzler, Oberhauser, Westerman, & Nadorff, 2011; Lee & Gae, 2007). In addition, some results are unable to be applied to multiple populations (Allen et. al, 2004; Blair & Fletcher, 2010; Gentzler et. al, 2011; Lee & Gae, 2007; Mikami et. al, 2010; Rosen, Cheever, & Carrier, 2008) or lack diverse samples (Amato & Fowler, 2002). The current study seeks to rectify these limitations.

The Present Study

The current study aims to fill in the gaps in past research examining adolescent-parent communication and adolescent technology use. Although a great deal of research has been conducted on adolescent-parent communication, little to no research has examined the relationship between adolescent-parent communication and adolescent technology use. The current study focuses on this overlooked relationship and is grounded in two theoretical frameworks—family systems theory (Cox and Paley, 1997) and social domain theory (Smetana et. al, 2006). Moreover, the present study focuses on what recent research has shown to be the more salient types of technology for adolescents.

Technology has rapidly changed over the last few years, making it impossible for research to keep pace with all the latest developments. In the nineties and early
2000s, cell phones were just phones that adults used to call or send text messages to another person. Now, cell phones are nicknamed smartphones. Before, computers were just used for information, emailing, instant messaging and the occasional game. Now, tablets are added to the computer market, and other uses for the computer have become more important, such as social networking.

The Pew Internet and American Life Project (2012) published a report that asked adolescents between the ages of twelve and seventeen about their text messaging use. For example, they found that the average text user sends 60 texts a day, ten more texts than in 2009 (Pew Internet and American Life Project, 2012). This number increases for older adolescents, who send 60 to 100 texts a day. This increase in texting has been lead by older, African-American male adolescents. More than half of these youth say they text every day with people in their lives, and research shows the number of actual phone calls between adolescents and their friends have decreased (Pew Internet and American Life Project, 2012). However, those who text the most are also talking the most on their phones, suggesting that although the frequency of adolescents’ phone use for calling their friends has decreased, it still has a role in their lives. In addition, youth who talk to their friends face-to-face outside of school several times a week has increased from 28% in 2009 to 37% in 2011 (Pew Internet and American Life Project, 2012).

Adolescents and young adults are quickly becoming the most frequent users of technology. As technology advances at such a rapid pace, the questions about how all these new technologies impact adolescents and their relationships remain unanswered.
Recent research suggests that adolescents’ use of communication technologies—phone, texting, email/instant messaging—have significantly increased just in the last three years (Pew Internet and American Life Project, 2012).

The aim of the present study was to assess the relationship between adolescent-parent communication and adolescent technology use. Data from the Adolescent Adjustment Project (AAP) were used because they addressed some of the previously mentioned limitations (e.g., cross-sectional design, lack of sample diversity). Since research has not established the direction of the relationship between adolescent-parent communication and adolescent technology use, the current study explored these relationships bi-directionally. More specifically, the following research questions will be addressed:

**Question #1:** Does adolescent-parent communication (open communication and problems in communication) at Time 1 predict adolescent phone use (voice use and texting), email, or instant messaging at Time 2?

**Question #2:** Does adolescent phone use (voice use and texting), email, or instant messaging at Time 1 predict adolescent-parent communication (open communication and problems in communication) at Time 2?

Separate analyses were conducted to examine each technology type. Further, for each of these questions, adolescent and parent gender differences were explored.

Prior research suggests adolescents may imitate their same-sex parent (Bussey & Bandura, 1984) and may be more influenced by their mothers to engage in risky behaviors (Guilamo-Ramos, Jaccard, Dittus, & Bouris, 2006). Perhaps girls who have
less open communication with their mothers will use technology more than boys who have less open communication with their mothers. It is hypothesized that the more open communication adolescents have with their parents, the less inclined adolescents will use technology (phone, text message, email, IM). This is expected to be significant for girls but not for boys, since girls are socialized to express their emotions and feelings and may be able to express themselves to their parents (Proulx & Helms, 2008). Conversely, it is hypothesized that the more problems in communication adolescents have with their parents, the more adolescents will use technology. This relationship is expected to be significant for boys but not for girls, given that boys are more independent and are socialized to not express their feelings (Proulx & Helms, 2008).
Chapter 2

METHOD

Participants

The subsample for this study was drawn from a larger sample of youth who participated in the Adolescent Adjustment Project (Ohannessian, 2009). The primary goal of the Adolescent Adjustment Project was to examine why some disadvantaged youth have adjustment issues, whereas others do not. The Adolescent Adjustment Project collected data between 2006 and 2009; the present study used data from Waves 2 and 3 (between 2007 and 2008). For Waves 2 and 3, there were 1,036 tenth and eleventh graders. Fifty-three percent of the sample was female. Participants were recruited from public high schools in Delaware, Maryland, and Pennsylvania. Although a little more than half of the sample was Caucasian (58%), the sample included African-American (22%), Hispanic (11%), and Asian (2%) participants. The sample’s age ranged between fourteen and nineteen years old ($M = 16.15$, $SD = .75$). The majority of the adolescents (56%) lived with both biological parents; eighty-five percent lived with their biological mother and 61% lived with their biological father.
Measures

Technology Use Questionnaire.

The Technology Use Questionnaire was used to assess frequency of technology use (watching television, talking on the phone, listening to a stereo/radio, texting, playing video games, email/IM, listening to an IPOD/MP3 player, working on a computer, and surfing the web). The questionnaire was comprised of eleven items with the first nine items using responses ranging from $1 = \text{none}$ to $6 = 4 \text{ hours or more per day}$. This survey asked adolescents to indicate how many hours per day they spent using each technology. For the purposes of this study, only the items asking about how frequent an adolescent used the phone, texted, emailed, or instant messaged will be considered. It is important to note that we do not know if these participants used these technologies to speak to peers and/or family members.

Adolescent-Parent Communication.

The 20-item Parent-Adolescent Communication Scale (Barnes & Olson, 1985) was used to assess communication between adolescents and their parents. The response scale ranges from $1 = \text{strongly disagree}$ to $5 = \text{strongly agree}$. The present study used both the open and problem communication subscales. Each subscale was comprised of ten items. A representative item for the open subscale is, “I can discuss my beliefs with my mother/father without feeling restrained or embarrassed.” A representative item for the problems subscale is, “When talking to my mother/father, I have a tendency to say things that would be better left unsaid.” Open and problem communication scores were obtained separately for adolescents and their mothers and adolescents and their fathers, when applicable. A high score obtained on the open
scale indicates more openness in the adolescent-parent relationship, whereas a high score obtained on the problems scale indicates more problems in the adolescent-parent relationship. Previous research has supported the validity of this measure (Barnes & Olson, 2003). In the present sample, the Cronbach alpha coefficient was .92 for adolescent-mother open communication and .78 for adolescent-mother problems in communication. The Cronbach alpha coefficient for adolescent-father open communication was .94 and .82 for adolescent-father problems in communication. Both parents and adolescents filled out these surveys; only adolescents’ responses will be considered for this study.

**Procedure**

This study had the University of Delaware Institutional Review Board’s approval. During the spring semesters between 2006 and 2009, trained research assistants administered surveys to students who provided assent and had parental consent. The survey took approximately forty minutes to complete. Adolescents were informed that their participation was voluntary and they could withdraw from the study at any time. All participants were assured that their answers would be kept confidential. Upon completion of the survey, the adolescents were given a movie pass. Participants were invited to participate again in the spring, approximately one year later. At that time, the same protocol was used.
Chapter 3
RESULTS
Analysis

Descriptive statistics were calculated for all of the study variables. Bivariate correlations were run to examine the associations between adolescent-parent communication and adolescents’ technology use. Finally, a series of linear regression models were conducted to examine if adolescent-parent communication predicts adolescents’ technology use or if the reverse direction is significant. The first set of models included the adolescent-parent open and problems in communication scores as the independent variables and the adolescent technologies as the dependent variables. The second set of models examined the reverse direction of this relationship, with adolescent technologies as the independent variables and adolescent-parent open and problem in communication scores as the dependent variables. Since there have been clear gender differences in prior studies, all of the analyses will be conducted separately by the gender of the adolescent.

Descriptive Statistics

Independent samples t-tests were conducted to examine whether adolescent-parent communication and technology use differed by the gender of the adolescent (see Table 1). Results indicated significant gender differences in technology use. Girls talked on the phone \( t(991.17) = -6.79, p < .001 \), text messaged \( t(997.30) = -4.82, p \)
and emailed/instant messaged \([t(1000) = -4.51, p < .001]\) more frequently than boys. No significant gender differences were observed for adolescent-parent communication.

**Bivariate Analyses**

Bivariate correlations were run to examine the associations between adolescent technology use and adolescent-parent communication (both assessed at Time 1). Generally, adolescent technology use was associated with adolescent-parent communication for both boys and girls (see Table 2).

Results for boys and girls differed from each other. For boys, a negative correlation was found, such that text messaging was associated with fewer problems in communications with mothers \((r = -.14, p < .01)\). Conversely, for girls, technology use was associated with less open and more problems in communication with their parents. Talking on the phone was associated with more problems in communication with mothers \((r = .11, p < .05)\) and less open communication with fathers \((r = -.15, p < .001)\) for girls.

**Regression Analyses**

Seven linear regression models were conducted to examine the unique contributions for each outcome. In order to examine if adolescent-parent communication predicted adolescent technology use, the first three models included all four adolescent-parent communication variables as independent variables (assessed at Time 1) and each technology variable as a dependent variable (assessed at Time 2). In addition, in order to examine if adolescent technology use predicted adolescent-
Regression Results for Girls

**Technology Use.** Adolescent-parent communication was found to predict adolescent technology one year later (see Table 3). However, the results differed by the gender of the parent (see Figure 1). Results indicated more problems in communication with mothers predicted more technology use for girls, whereas more open communication with fathers predicted less technology use. More specifically, more problems in communication with mothers predicted more phone use (β = .14, p < .05) and more text messaging (β = .15, p < .05), whereas more open communication with fathers predicted less phone use (β = -.15, p < .05).

**Communication with Mother.** As shown in Table 4, girls’ technology use was found to predict more problems in communication and less open communication with mothers a year later. Talking on the phone predicted less open communication with mothers (β = -.11, p < .05). In addition, talking on the phone (β = .12, p < .05) and text messaging (β = .12, p < .05) predicted more problems in communication with mothers (see Figure 2).

**Communication with Father.** The relationship between girls’ technology use and communication with fathers was less pronounced than the relationship between

parent communication, these four models included all technology variables as predictors (assessed at Time 1) and each adolescent-parent communication variable as a dependent variable (assessed at Time 2). All regression models were conducted separately by the gender of the adolescent.
girls’ technology use and communication with mothers (see Table 4). Similar to communication with mothers, talking on the phone predicted less open communication with fathers ($\beta = -.21, p < .001$) a year later for girls (see Figure 2).

Regression Results for Boys

**Technology Use.** Adolescent-parent communication did not significantly predict boys’ technology use one year later (see Table 5 and Figure 3).

**Communication with Mother.** In contrast to the results for girls, the pattern of boys’ technology use predicting communication with mothers was less consistent (see Table 6). Only text messaging predicted later adolescent-parent communication for boys. More specifically, text messaging predicted less open communication with mothers ($\beta = -.19, p < .001$) for boys a year later (see Figure 4).

**Communication with Father.** As shown in Table 6, boys’ technology use did not significantly predict communication with fathers one year later (see Figure 4).
Chapter 4
DISCUSSION

The goal of the present study was to examine the relationship between adolescents’ perceptions of their communication with their parents and their technology use. More specifically, the primary question addressed was whether adolescent technology use predicted adolescent-parent communication and/or whether adolescent-parent communication predicted adolescent technology use.

Overall, girls used technology more than boys. Previous research supports this finding (e.g. Witt, Massman, & Jackson, 2011). The types of technology examined in this study might explain this finding. Communication technologies, such as talking on the phone, text messaging, and emailing/IMing, were the sole focus of this study and it may be that boys may not use these technologies as frequently as girls. However, it may be that other types of technology that were not assessed in this study are more salient among boys. For example, research has indicated that boys play video games more frequently than girls (Pew Internet and American Life Project, 2008; Willoughby, 2008). Results from this study suggest that communication technologies may not be as salient for boys as they are for girls, thus this discrepancy might be better explained in future research by including other technologies, such as video game playing.
In the present study, correlation analyses indicated that a relationship existed between adolescent technology use and adolescent-parent communication. Boys’ technology use was associated with fewer problems with fathers. In contrast, girls’ technology use was associated with more problems in communication with mothers and less open communication with fathers. This pattern is consistent with earlier research indicating that girls are socialized to be more expressive and open with their parents (e.g. Galambos, Berenbaum, & McHale, 2009). Although we are unable to tell from these data if adolescents are using technology to interact with others, two possible explanations are offered. Perhaps when girls use technology more frequently, this might result in some conflict in the adolescent-parent relationship, as girls may be communicating with their friends more than their parents, especially their mothers. Conversely, girls may be using technology to communicate with their mothers; this could potentially lead to issues of disclosure, secrecy, and parental monitoring (Smetana et al., 2006).

**A-P communication at Time 1 and adolescent technology use at Time 2**

For girls, adolescent-parent communication predicted later technology use. These results differed by the gender of the parent. More problems in communication with mothers predicted more phone use and more text messaging. However, more open communication with fathers predicted less phone use. Perhaps adolescent girls who feel they have more communication problems with their mothers are drawn to communication technologies to talk to other people. In addition, previous research has shown that adolescents have sought peer relationship to compensate for poor
relationships with their parents (Nickerson & Nagle, 2005). It might be that adolescent girls are using technology to compensate for problematic communication with their mothers.

Research has shown that conflict arises in families when predetermined boundaries are breached (Cox & Paley, 1997). It is possible that the increase in conflict that may occur in the adolescent-parent relationship might lead to more problems in communication with parents. As research has indicated that mothers tend to spend more time with their children and act as the primary caregiver (e.g. Williams & Kelly, 2005), this might explain why adolescent girls used technology more frequently in the following year. Furthermore, research has found girls to view their mothers as someone they can openly communicate with and who is supportive (Holmbeck et al., 1995). If adolescent girls do not find their communication with their mothers to be helpful or positive and instead experience more problematic communication with their mothers, this could result in girls using technology to engage with other individuals where communication is less hostile. Girls could be talking on the phone and text messaging their peers to compensate for poor, problematic communication with their mothers.

In addition, research has indicated that adolescents and their parents’ perceptions tend to be different. For example, in regards to adolescent depression, both adolescents and their parents tend to have different views on when depressive symptoms begin (Cole, Tram, Martin, Hoffman, Ruiz, Jacquez, & Maschman, 2002). Perhaps this logic can be used to explain girls’ communication with their mothers in
that girls and mothers may have different perceptions of how problematic or open communication is in the relationship. This discrepancy may lead to more conflict in girls’ relationships with their mothers that may lead to more problematic communication, which could result in girls using technology more frequently to engage with other individuals. Finally, since fathers tend to not spend as much time as mothers with their children (Hosley & Montemayor, 1997), it may be plausible to believe that the chance for conflict in this relationship is lower or that girls’ communication with their fathers does not have as much of an impact on their technology use. Thus, adolescent girls may have more positive communication with their fathers and may not need to resort to using technology to communicate with others.

For boys, there were no significant findings in adolescent-parent communication predicting technology use. Although there were no significant findings in this relationship, these lack of findings are interesting in themselves. It may be that because boys are socialized to be less relationship oriented and more object oriented (e.g. Su, Rounds, & Armstrong, 2009), their communication with parents may not have an impact on their technology use. It could be possible that other types of relationships might have more of an impact on their technology use. Research has indicated that adolescents typically emulate their same-sex parent (Bussey & Bandura, 1994). However, research shows mothers spend more time with their children than fathers (Williams & Kelly, 2005); perhaps the chance for conflict in communication is lessened since boys and fathers may not communicate regularly.
Adolescent technology use at Time 1 and A-P communication at Time 2?

For girls, talking on the phone predicted less open communication and more problems in communication with mothers. In addition, text messaging predicted more problems in communication with mothers. For boys, only text messaging predicted less open communication with mothers. There were no significant findings in predicting communication with fathers.

Referring back to social domain theory (Smetana et al., 2005), perhaps boys and girls view their technology use as a personal issue and mothers might view their children’s technology use as a conventional or prudential issue. This potential disagreement about technology use may lead to less open and more problematic communication with mothers. Moreover, adolescents may feel that their parents are infringing upon their boundaries (Cox & Paley, 1997), which may result in more problems in communication with their parents. In addition, it is interesting that boys’ technology use did not predict communication with fathers. Perhaps previous research can explain this finding. Past research has indicated that mothers tend to have a closer relationship with their children than do fathers (Williams & Kelly, 2005). This could be as a result of mothers tending to play the role of primary caregiver and may be communicating more with their children. Future research should possibly focus on the adolescent-father relationship to further explore this situation.

The results from this study might be better served by using the uses and gratification framework for interpretation. The uses and gratifications approach (Katz, Gurevitch, & Hass, 1973) suggests that an individual plays an active role in choosing
what media or technology he or she uses and that this decision is based on psychological, social, and gratification-seeking motives. In other words, individuals are motivated to use certain technologies and media for their own personal reasons (Lin, 1993). This framework could help explain these findings. For example, if we understand that girls may have more problematic communication with their mothers, this may explain why they use technology more frequently a year later. Perhaps girls are using technology to communicate with others (e.g. peers) to fulfill their own psychological needs.

**Strengths of the Present Study**

This study adds to the literature by exploring the longitudinal relationship between adolescent technology use and adolescent-parent communication. Previous research is limited by the use of homogenous samples and cross-sectional research designs. Lack of sample diversity and the use of cross-sectional research designs make it difficult to apply findings to the greater population. The present study rectifies these limitations by including both a large, diverse sample and a longitudinal research design. This allows for this study’s results to have the ability to be applied to the overall population. The relationship between adolescent-parent communication and adolescent technology use is unclear; thus, the present study examined this relationship bi-directionally. Another strength of the present study is the inclusion of both genders of the adolescent and parent. Finally, research tends to focus on one dyad in the family; the present study offers a more comprehensive view of the family by
examining multiple dyads—father/daughter, father/son, mother/daughter, and mother/son.

**Limitations**

Although this study has several strengths, limitations must be considered. This study relied on self-report data with one informant. Future research should include both adolescent and parent self-report data to better understand the adolescent-parent relationship. Research has shown that adolescents and parents’ perceptions differ on various topics (e.g. Ohannessian, Lerner, Lerner, & Von Eye, 1995). In addition, perhaps other methodologies would be better suited for studying this issue. For example, diaries or even interviews could be used to supplement quantitative data.

Another limitation is the instrument used to measure technology use. The field may benefit by moving away from asking about frequency of technology use and ask other types of questions (e.g. importance of communication via technology). In addition, we do not know from these data with whom these adolescents are interacting when using these technologies. In order to move the field forward, we need to create a reliable and valid measure of technology use. As of now, the only measure of technology use that has shown to be reliable and valid and asks questions other than frequency of technology use is Ellison’s Facebook Intensity Scale (2007). Knowing more than how much time adolescents spend with various technological activities is helpful to further understand adolescent technology use.
Conclusion and Implications

Results from the present study indicate a relationship between adolescent technology use and adolescent-parent communication. These results have implications for understanding how adolescent technology use might impact adolescent-parent communication or how adolescent-parent communication might impact adolescent technology use. Although results from this study may seem preliminary, the present study is one of the first to document the role of technology in adolescents’ lives and how it impacts their relationships within the family. In addition, most research conducted on adolescent technology use is in relation to clinical diagnoses (e.g. depression or anxiety). A very small percentage of adolescents are clinically diagnosed with a disorder such as these. The present study examines normative processes that all adolescents experience. Every adolescent will have some type of family and encounter and interact with some type of technology. From this perspective, these results can be applied to more individuals, whereas studies that focus on such a small portion of the population are unable to do so. Finally, instead of analyzing this relationship in a utopian versus dystopian context, perhaps we should consider how adolescents and parents could use technology together to be better connected and more open with each other during a developmental period where conflict increases
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Table 1  Means and Standard Deviations for the Technology Use and Adolescent-Parent Communication Variables at Time 1 by Gender

<table>
<thead>
<tr>
<th>Variables</th>
<th>Boys</th>
<th></th>
<th>Girls</th>
<th></th>
<th>T-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
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<tr>
<td>Talking on the phone</td>
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<td>1.46</td>
<td>3.70</td>
<td>1.56</td>
<td>-6.787***</td>
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<td>Text messaging</td>
<td>2.24</td>
<td>1.53</td>
<td>2.75</td>
<td>1.80</td>
<td>-4.820***</td>
</tr>
<tr>
<td>E-mailing/IMing</td>
<td>2.76</td>
<td>1.66</td>
<td>3.25</td>
<td>1.71</td>
<td>-4.507***</td>
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<tr>
<td>Adolescent-Mother Open Communication</td>
<td>35.20</td>
<td>9.35</td>
<td>35.84</td>
<td>10.14</td>
<td>-1.023</td>
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<tr>
<td>Adolescent-Mother Problems in Communication</td>
<td>28.41</td>
<td>7.43</td>
<td>28.60</td>
<td>8.17</td>
<td>-.39</td>
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<tr>
<td>Adolescent-Father Open Communication</td>
<td>31.68</td>
<td>10.76</td>
<td>31.20</td>
<td>11.50</td>
<td>.66</td>
</tr>
<tr>
<td>Adolescent-Father Problems in Communication</td>
<td>27.34</td>
<td>8.63</td>
<td>27.59</td>
<td>8.41</td>
<td>.44</td>
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</table>

* p < .05  ** p < .01  *** < .001
Table 2  Correlations between the Study Variables at Time 1 by Gender

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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</thead>
<tbody>
<tr>
<td>1. Talking on the Phone</td>
<td>--</td>
<td>.28***</td>
<td>.19***</td>
<td>.05</td>
<td>.11*</td>
<td>-1.15***</td>
<td>.02</td>
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<td>2. Text Messaging</td>
<td>.38***</td>
<td>--</td>
<td>.33***</td>
<td>.01</td>
<td>.07</td>
<td>.04</td>
<td>.06</td>
</tr>
<tr>
<td>3. E-mailing/Texting</td>
<td>.33***</td>
<td>.46***</td>
<td>--</td>
<td>-.08</td>
<td>.10*</td>
<td>-0.05</td>
<td>.07</td>
</tr>
<tr>
<td>4. Adolescent-Mother Open Communication</td>
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<td>-.02</td>
<td>.00</td>
<td>--</td>
<td>-.58***</td>
<td>.16***</td>
<td>-.07</td>
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<tr>
<td>5. Adolescent-Mother Problems in Communication</td>
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<td>.06</td>
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<td>--</td>
<td>-.08</td>
<td>.35***</td>
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<td>6. Adolescent-Father Open Communication</td>
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<td>.05</td>
<td>.33***</td>
<td>-.12*</td>
<td>--</td>
<td>-.39***</td>
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<td>7. Adolescent- Father Problems in Communication</td>
<td>-.04</td>
<td>.02</td>
<td>-.04</td>
<td>-.05</td>
<td>.43***</td>
<td>-.26***</td>
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</tr>
</tbody>
</table>

Note: Correlations between the technology measures at Time 1 and the adolescent-parent communication measures at Time 1 are presented for boys under the diagonal. Correlations between the technology use measures at Time 1 and the adolescent-parent communication measures at Time 1 are presented for girls above the diagonal.

*p<.05; **p<.01; ***p<.001.
Table 3  Linear Regression: Predicting Adolescent Technology Use at Time 2 from Adolescent-Parent Communication at Time 1 for Girls

<table>
<thead>
<tr>
<th>Variable</th>
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</tr>
</thead>
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<tr>
<td></td>
<td></td>
<td>Phone</td>
<td>Text</td>
<td>E-mail</td>
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<tr>
<td></td>
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<td>SE B</td>
<td>B</td>
<td>SE B</td>
</tr>
<tr>
<td>Adolescent-Mother Open Communication</td>
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<td>.01</td>
<td>.03</td>
<td>.01</td>
</tr>
<tr>
<td>Adolescent-Mother Problems in Communication</td>
<td>.03</td>
<td>.01</td>
<td>.14*</td>
<td>.03</td>
</tr>
<tr>
<td>Adolescent-Father Open Communication</td>
<td>-.02</td>
<td>.01</td>
<td>-.15*</td>
<td>-.02</td>
</tr>
<tr>
<td>Adolescent-Father Problems in Communication</td>
<td>-.02</td>
<td>.01</td>
<td>-.10</td>
<td>-.03</td>
</tr>
</tbody>
</table>

*p < .05, **p < .01, ***p < .001
Table 4  Linear Regression: Predicting Adolescent-Parent Communication at Time 2 from Adolescent Technology Use at Time 1 for Girls

<table>
<thead>
<tr>
<th>Variable</th>
<th>Adolescent-Mother Open Communication</th>
<th>Adolescent-Mother Problems in Communication</th>
<th>Adolescent-Father Open Communication</th>
<th>Adolescent-Father Problems in Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE B</td>
<td>β</td>
<td>B</td>
</tr>
<tr>
<td>Phone</td>
<td>-.70</td>
<td>.36</td>
<td>-.11*</td>
<td>.67</td>
</tr>
<tr>
<td>Text Messaging</td>
<td>.04</td>
<td>.34</td>
<td>.01</td>
<td>.61</td>
</tr>
<tr>
<td>E-mailing/IMing</td>
<td>-.09</td>
<td>.33</td>
<td>-.02</td>
<td>-.02</td>
</tr>
</tbody>
</table>

*p < .05, **p < .01, ***p < .001
Table 5  Predicting Adolescent Technology Use at Time 2 from Adolescent-Parent Communication at Time 1 for Boys

<table>
<thead>
<tr>
<th>Variable</th>
<th>Phone</th>
<th></th>
<th></th>
<th>Text Messaging</th>
<th></th>
<th>E-mailing/IMing</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE B</td>
<td>β</td>
<td>B</td>
<td>SE B</td>
<td>β</td>
<td>B</td>
</tr>
<tr>
<td>Adolescent-Mother Open Communication</td>
<td>.00</td>
<td>.01</td>
<td>.02</td>
<td>.00</td>
<td>.02</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>Adolescent-Mother Problems in Communication</td>
<td>.02</td>
<td>.02</td>
<td>.10</td>
<td>.02</td>
<td>.02</td>
<td>.07</td>
<td>.02</td>
</tr>
<tr>
<td>Adolescent-Father Open Communication</td>
<td>.00</td>
<td>.01</td>
<td>-.02</td>
<td>.01</td>
<td>.01</td>
<td>.08</td>
<td>.01</td>
</tr>
<tr>
<td>Adolescent-Father Problems in Communication</td>
<td>-.01</td>
<td>.01</td>
<td>-.08</td>
<td>-.01</td>
<td>.02</td>
<td>-.05</td>
<td>-.01</td>
</tr>
</tbody>
</table>

*p < .05, **p < .01, ***p < .001
Table 6  
Linear Regression: Predicting Adolescent-Parent Communication at Time 2 from Adolescent Technology Use at Time 1 for Boys

<table>
<thead>
<tr>
<th>Variable</th>
<th>Adolescent-Mother Open Communication</th>
<th>Adolescent-Mother Problems in Communication</th>
<th>Adolescent-Father Open Communication</th>
<th>Adolescent-Father Problems in Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE B</td>
<td>β</td>
<td>B</td>
</tr>
<tr>
<td>Phone</td>
<td>.65</td>
<td>.43</td>
<td>.10</td>
<td>.26</td>
</tr>
<tr>
<td>Text Messaging</td>
<td>-1.27</td>
<td>.47</td>
<td>-.19***</td>
<td>.04</td>
</tr>
<tr>
<td>E-mailing/IMing</td>
<td>.39</td>
<td>.39</td>
<td>.07</td>
<td>.42</td>
</tr>
</tbody>
</table>

*p < .05, **p < .01, ***p < .001
FIGURES
Figure 1 Does adolescent-parent communication predict girls’ technology use?

- Time 1
  - Girls open communication with mothers
  - Girls open communication with fathers
  - Girls problems in communication with mothers
  - Girls problems in communication with fathers

- Time 2
  - Girls phone use
  - Girls text messaging
  - Girls e-mailing/IMing

\[ \beta = .14^* \]
\[ \beta = .15^* \]
\[ \beta = -.15^* \]
Figure 2 Does girls’ technology use predict adolescent-parent communication?

- Girls phone use: \( \beta = -.11^* \)
- Girls text messaging: \( \beta = -.21^{***} \)
- Girls e-mailing/IMing: \( \beta = .12^* \)
- Girls open communication with mothers
- Girls open communication with fathers
- Girls problems in communication with mothers
- Girls problems in communication with fathers
Figure 3  Does adolescent-parent communication predict boys’ technology use?
Does boys’ technology use predict adolescent-parent communication?

\[ \beta = -0.19^{**} \]
# Technology Use Questionnaire

## Parent-Adolescent Communication (Mother)

<table>
<thead>
<tr>
<th></th>
<th>1 Strongly Disagree</th>
<th>2 Moderately Disagree</th>
<th>3 Neither Agree Nor Disagree</th>
<th>4 Moderately Agree</th>
<th>5 Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I can discuss my beliefs with my mother without feeling restrained or embarrassed.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Sometimes I have trouble believing everything my mother tells me.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. My mother is always a good listener.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I am sometimes afraid to ask my mother for what I want.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. My mother has a tendency to say things to me which would be better left unsaid.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. My mother can tell how I’m feeling without asking.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I am very satisfied with how my mother and I talk together.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. If I were in trouble, I could tell my mother.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. I openly show affection to my mother.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. When we are having a problem, I often give my mother the silent treatment.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. I am careful about what I say to my mother.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. When talking to my mother, I have a tendency to say things that would be better left unsaid.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. When I ask questions, I get honest answers from my mother.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. My mother tries to understand my point of view.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. There are topics I avoid discussing with my mother.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. I find it easy to discuss problems with my mother.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. It is very easy for me to express all my true feelings to my mother.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. My mother nags/bothers me.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. My mother insults me when she is angry with me.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. I don’t think I can tell my mother how I really feel about some things.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TECHNOLOGY USE QUESTIONNAIRE

We would like for you to tell us how much you use technology. Please indicate how much time you spend doing each activity on an average/typical day by circling the appropriate number.

For each activity, please circle one of the following:

1 = None  
2 = Less than 1 hour  
3 = About 1 hour  
4 = About 2 hours  
5 = About 3 hours  
6 = 4 or more hours

<table>
<thead>
<tr>
<th>Activity</th>
<th>None</th>
<th>Less Than 1 Hour</th>
<th>About 1 Hour</th>
<th>About 2 Hours</th>
<th>About 3 Hours</th>
<th>4 or More Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Watch T.V.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>2. Talk on the phone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>3. Listen to music on a stereo or radio</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>4. Text message</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>5. E-mail or IM</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>6. Play video games (PlayStation, Nintendo, Game Boy, Xbox, etc.) or computer games</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7. Listen to an iPod or MP3 player</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>8. Work on the computer</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>9. Surf the Web</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>
VIDEO GAMES

10. Below, please CIRCLE the following types of video games that you play. You may circle more than one. For example, if you play five of the types listed, you would circle all five of them.

a = None. I NEVER play video games.

b = Traditional games (for example, Mario Brothers, Donkey Kong)

c = Fantasy games (for example, Harry Potter, Star Wars)

d = Racing games

e = Simulation games (for example, Sims games, Theme Park)

f = War or Fighting games (for example, Operation Vietnam)

g = Traditional Sports games (for example, soccer, football, tennis)

h = Extreme Sports games (for example, skateboarding, snowboarding)

i = Animal games (for example, Dogz, Catz)

j = Board games (for example, Monopoly, Battleship, chess)

k = Physical games (for example, Dance Dance Revolution, Wii games)

l = Other (please list below)

11. Please CIRCLE who you usually play video games with.

a = Alone. I play by myself.

b = With friends.

c = With family members.
HUMAN SUBJECTS APPROVAL LETTER

DATE: June 18, 2012

TO: Christine Ohannessian, Ph.D.
FROM: University of Delaware IRB

STUDY TITLE: [147473-4] Parental Alcoholism and Adolescent Psychological Adjustment

SUBMISSION TYPE: Continuing Review/Progress Report

ACTION: APPROVED
APPROVAL DATE: June 18, 2012
EXPIRATION DATE: July 6, 2013
REVIEW TYPE: Expedited Review

REVIEW CATEGORY: Expedited review category # 7

Thank you for your submission of Continuing Review/Progress Report materials for this research study. The University of Delaware IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All sponsor reporting requirements should also be followed.

Please report all NON-COMPLIANCE issues or COMPLAINTS regarding this study to this office.

Please note that all research records must be retained for a minimum of three years.

Based on the risks, this project requires Continuing Review by this office on an annual basis. Please use the appropriate renewal forms for this procedure.