

“IT’S A BAD THING...BUT IT’S A GOOD THING TOO”:
A MIXED METHODS EXAMINATION OF TECHNOLOGY USE AND CYBER DATING
ABUSE PERPETRATION IN ADOLESCENT ROMANTIC RELATIONSHIPS

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A dissertation submitted to the faculty at University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Department of Health Behavior in the Gillings School of Global Public Health.

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ABSTRACT

Christine Baillie Agnew-Brune: “It’s a bad thing...but it’s a good thing too”: A mixed methods examination of technology use and cyber dating abuse perpetration in adolescent romantic relationships

(Under the direction of Clare Barrington)

Background: Technology use among adolescents is ubiquitous as are romantic relationships. While there is increasing concern that adolescents use technology to abuse their romantic partners, there has been limited research examining this phenomenon. The aims of this mixed-methods dissertation were to: 1) qualitatively examine adolescent perceptions of technology use in romantic relationships and; 2) quantitatively examine the risk and protective factors associated with technology-based communications used to abuse romantic partners.

Methods: I conducted 10 focus groups with 55 adolescents between 16 and 18 years of age in Metro Atlanta, GA and analyzed data using thematic coding procedures. Quantitative data for the second aim came from a national dating abuse prevention RCT entitled Moms and Teens for Safe Dates. I used a generalized estimating equation (GEE) approach to examine if cyber dating abuse (CDA) perpetration- psychological and sexual abuse that occurs via technology-shared risk and protective factors previously identified as being associated with dating abuse perpetration conceptualized as occurring in-person (IPDA).

Results: In the focus groups adolescents reported that they perceive constant pressure to stay connected to peers and romantic partners through technology-based communication. Further, they described how technology-based communications often make them feel emotionally detached when communicating, which exerts both positive and negative influences

on their romantic relationships. These influences may also contribute to CDA perpetration. For example, participants explained that they felt it was easier to be aggressive and verbally abusive through technology-based communications compared to in-person communications. In Aim 2, I found that CDA and IPDA perpetration shared four risk factors: acceptance of dating abuse, mother-adolescent discord, depressed affect, and anger dysregulation. There were no unique risk and protective factors for either mode of abuse suggesting that these two modes of abuse may share a similar etiology.

Conclusion: This dissertation contributes important formative knowledge about adolescent technology use and CDA. Findings highlight the different roles technology plays in adolescent romantic relationships and the risk factors associated with both CDA and IPDA perpetration, which can inform interventions. Future research is needed to examine CDA in the context of the rapid and dynamic evolution of technology-based communications.

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LIST OF ABBREVIATIONS

AOR	Adjusted odds ratio
CI	Confidence interval
CDA	Cyber dating abuse
CDC	Centers for Disease Control and Prevention
GEE	Generalized estimating equations
IPDA	In-person dating abuse
RCT	Randomized controlled trial

CHAPTER 1: INTRODUCTION AND DISSERTATION OVERVIEW

1.1 Problem Statement

Over the past decade, technology use among adolescents has rapidly expanded. In 2004, 45% of adolescents reported having a cellphone and 59% reported having access to a personal computer at home. By 2014, 88% reported having a cellphone (of which 73% were smartphones) and 87% reported having access to a personal computer at home (Lenhart et al., 2015). With this increased use of technology has come the recognition that these technologies (e.g. computers, cellphones, and other online social networking mechanisms) may play an important role in the development of romantic relationships (Subrahmanyam & Smahel, 2011; Valkenburg & Peter, 2011). Previously, romantic relationships developed primarily through in-person interactions (Reed, Tolman, & Safyer, 2015). However, technology provides adolescents with a significant new space to initiate, maintain, and end their romantic relationships. Technology also affords adolescents the opportunity to move previously private interactions into more public spaces, constant access to partners regardless of geographic distance, and the ability to share information about romantic relationships with large social networks instantly (Draucker & Martsof, 2010; Reed et al., 2015).

Alongside the expanding landscape of adolescent romantic relationships has been the growing interest and concern surrounding how adolescents potentially misuse technology to abuse and control their romantic partners (Fox & Tokunaga, 2015; Lucero, Weisz, Smith-Darden, & Lucero, 2014; Zweig, Dank, Yahner, & Lachman, 2013a). Recent evidence suggests

that adolescents use technologies to psychologically and sexually abuse the people with whom they are romantically involved (Cutbush, Williams, Miller, Gibbs, & Clinton-Sherrod, 2012; Zweig et al., 2013a). There is a lack of a common definition for this new mode of abuse. Researchers have referred to it as cyber dating abuse (Borrajo, Gamez-Guadix, & Calvete, 2015a; Dick et al., 2014; Zweig et al., 2013a), cyber-aggression (Schnurr, Mahatmya, & Basche, 2013), electronic dating violence/aggression (Cutbush et al., 2012; Hinduja & Patchin, 2013), and technology-assisted dating abuse (Stonard, Bowen, Lawrence, & Price, 2014). In this dissertation, I use the term cyber dating abuse (CDA) to refer to both psychological and sexual abuse delivered through technology-based communications because it is the term most frequently used in the literature (Borrajo, Gamez-Guadix, Pereda, & Calvete, 2015b). A wide range of behaviors are considered indicators of CDA. Psychological CDA indicators include monitoring a romantic partner's whereabouts and activities via technology (Burke, Wallen, Vail-Smith, & Knox, 2011; Lyndon, Bonds-Raacke, & Cratty, 2011), controlling a partner through excessive contact or harassment (Stonard et al., 2014), sending mean, rude or hurtful messages (Hinduja & Patchin, 2013). Sexual CDA indicators include sending sexually threatening or coercive messages (Zweig et al., 2013a), and spreading sexual rumors or sharing private pictures or videos that include nudity or are otherwise of a sexual nature publicly through social networks (Hinduja & Patchin, 2013; Lyndon et al., 2011).

Dating abuse is associated with multiple negative health outcomes. Several longitudinal studies highlight the consequences of victimization which include physical injury (O'Leary, Smith Slep, Avery-Leaf, & Cascardi, 2008), depression (Ackard, Eisenberg, & Neumark-Sztainer, 2007), cigarette use (Foshee, McNaughton Reyes, Gottfredson, Chang, & Ennett, 2013), suicidal ideation, substance use (Roberts, Klein, & Fisher, 2003), and subsequent abusive

relationships in young adulthood (Exner-Cortens, Eckenrode, & Rothman, 2012; Halpern, Spriggs, Martin, & Kupper, 2009; Smith, White, & Holland, 2003).

Although numerous studies have been conducted on the etiology of dating abuse, there has been very little research conducted on the specific etiology of CDA. Previous research on the etiology of dating abuse perpetration has almost exclusively focused on psychological, physical, and sexual abuse occurring in-person. However, the extent to which findings from this previous research on dating abuse can be generalized to CDA, a different mode of abuse, is not known.

1.2 Specific Aims

In response to the gaps in knowledge surrounding technology use in adolescent romantic relationships, I designed a dissertation using both qualitative and quantitative approaches to better understand the factors influencing technology use in romantic relationships as well as to examine what factors contribute to or protect adolescents from using technology to abuse their romantic partners. My study aims are:

Aim 1: Explore how adolescents use technology to communicate in their romantic relationships. Also, examine their perceptions of what influences adolescent use of technology and its impact on adolescent romantic relationships (Chapter 3).

Aim 2: Examine whether risk and protective factors are shared by CDA and IPDA perpetration, or whether they differ for the two modes of dating abuse in an effort to build a better understanding of CDA perpetration etiology (Chapter 4).

To address Aim 1, I used a qualitative approach that consisted of conducting 10 focus groups with adolescents between 16 and 18 years of age. I addressed Aim 2 through secondary analysis of cross-sectional data obtained in the *Moms and Teens for Safe Dates* RCT (Foshee et

al., 2015a). The design and methods used in each study are described in the respective manuscripts.

1.3 Significance and Organization of Dissertation

Taken together, this dissertation fills two important gaps in research on adolescent romantic relationships and dating abuse. First, while there is a general understanding that technology plays a large role in adolescent lives, there is limited research examining how technology influences their romantic relationships. Particularly, there is a paucity of research on adolescent perceptions of how technology influences their romantic relationships. This research is key in order to better understand the opportunities and risks adolescents' technology use poses to the development of their romantic relationships (Van Ouytsel, Van Gool, Walrave, Ponnet, & Peeters, 2016). Findings from such research can also better inform relationship interventions and offer insights for future research on adolescent romantic relationships. Second, no study to date has examined risk and protective factors for CDA perpetration. However, knowledge of such factors and whether they differ from the factors associated with in-person dating abuse perpetration (IPDA) is required for informing and tailoring prevention interventions. A first step in closing this gap is to examine whether risk and protective factors associated with previous research on dating abuse are shared by CDA perpetration to determine if this new mode of abuse may share a common etiology with IPDA. CDA will likely persist unless we develop evidence-based interventions that target all modes of abuse. In order to be effective, it is important that prevention programs accurately reflect both the influence technology has on adolescent dating behaviors and target risk and protective factors associated with CDA perpetration.

This dissertation has five chapters. This chapter, Chapter 1, provides an introduction to the dissertation and specific aims. Chapter 2 reviews the literature on key topic areas that

informed this dissertation. Chapter 3 presents the manuscript addressing Aim 1. Chapter 4 presents the manuscript addressing Aim 2. Chapter 5 concludes the dissertation with a discussion of key findings, dissertation limitations, and recommendations for future research.

CHAPTER 2: BACKGROUND

This chapter (Chapter 2) reviews the key areas examined across the two aims of this dissertation focused on the following empirical areas: technology-based communication among adolescents, technology use in adolescent romantic relationships, and adolescent dating abuse. I then describe the relevant theoretical base used to guide past research on dating abuse and the theory that suggests there may be differences between in-person and cyber behavior to provide a rationale for the examination of cyber dating behaviors.

2.1 Technology-Based Communication Among Adolescents

Prior to examining the literature on technology and adolescents it is important to define several key terms that I use throughout this dissertation. These key terms are detailed in Table 2.1.

Table 2.1. Review of key technology terms

Term	Definition
Computer-Mediated Communication	Human communication that occurs through the use of two or more electronic devices.
Cyberbullying	The use digital platforms by an individual or group of people to deliberately and repeatedly harass or threaten another individual or group.
Cyber Dating Abuse	Relationship abuse that occurs electronically via computers, blogs, mobile phones and other online social networking mechanisms.
In-person Dating Abuse	The physical, sexual, and psychological abuse that occurs within a dating relationship including stalking. Previous research on dating abuse has tended to conceptualize this abuse as occurring in-person.
Electronic Aggression	Encompasses a large number of digitally based behaviors including bullying, harassment, teasing, spreading rumors, making threatening or aggressive comments, and making rude or hurtful comments.
Digital Device	Devices such as computers, tablets, and cell phones that are used to access the Internet. Can be used for a variety of purposes including seeking information, consuming media, or communication.
Digital Platform	Software and applications. Primarily used in two ways: 1) one on one platforms to communicate with one other person and 2) social networking platforms where one person can share information and communicate with a large audience of other people.

Digital technology is an integral part of everyday life for adolescents throughout the United States (Subrahmanyam & Greenfield, 2008). Indeed, digital devices and platforms enable constant and immediate communication that did not previously exist (Gardner & Davis, 2013). Today's adolescent population communicate in a fundamentally different way than their pre-digital counterparts (Gardner & Davis, 2013). Adolescents report that they perceive that technology contributes to important functions in their lives including identity development and

personal autonomy apart from their parents (Borca, Bina, Keller, Gilbert, & Begotti, 2015). The Internet and digital devices such as computers, tablets, and cell phones that are used to access it, can be used for a variety of purposes including seeking information, consuming media, or communication. This dissertation is concerned with the third of these uses, technology-based communication.

Technology-based communication

The current generation of adolescents has grown up with almost constant access to digital technologies as a means of communicating (Gardner & Davis, 2013; Joiner et al., 2013).

Adolescents are often considered the most avid users of technology-based communication technologies (Lenhart, 2012; Lenhart et al., 2015; Madden et al., 2013). Technology-based communication is broadly defined as the use of a digital platform (e.g. social networking site, instant messenger, or text message software) on a digital device (e.g. computer, tablet, or cell phone) to communicate with someone else. Compared to face-to-face communication or voice to voice communication (also called telephone communication), technology-based communication is quickly becoming the most common form of communication among adolescents (Lenhart, Purcell, Smith, & Zickuhr, 2010). Though cell phones can be used for telephone communication, adolescents are decreasingly placing voice phone calls. As of 2011, 26% of adolescents report using a cell phone to place a telephone call down from 38% in 2009 (Lenhart, 2012). In the same study, approximately 28% of adolescents say they never talk on a cell phone (Lenhart, 2012).

Therefore, when cell phones are discussed in the dissertation, it is how adolescents use them to connect to the Internet and send/receive written messages that is of interest as these are the purposes for which the majority of adolescents use them. However, it is important to note that though technology-based communication has changed social interactions by moving them into a

digital environment, it is not clear whether this change has resulted in changes (increases or decreases) in face-to-face or voice to voice communication; but it is clear that the largest proportion of communication is now conducted through digital platforms (Lenhart et al., 2015). Below is a more detailed explanation of the types of digital platforms, their prevalence, and an examination of the current state of Internet access among adolescents in order to demonstrate how widespread access to digital technology has become.

Digital platforms and Internet access

Technology-based communication platforms can be grouped into two broad categories: platforms used to communicate with one other person, and social networking platforms where one person can share information and communicate with a large audience of other people. Types of digital platforms typically used to communicate with one other person (dyadic) include text messaging, email, and instant messaging. The Pew Research Internet Project examined the most popular types of dyadic communication choices among a sample of 1,060 adolescents between 13 and 17 years of age and reported that 91% of adolescents with cell phones use text messaging (Lenhart et al., 2015). The same study reported that 33% of adolescents use text messaging applications (such as WhatsApp and Kik) (Lenhart et al., 2015). Technology-based communication also occurs through a host of social networking platforms including blogs, video sharing (such as Vevo or YouTube), photo sharing (such as Tumblr or Instagram), multiplayer online computer games (such as World Of Warcraft), and virtual worlds (such as Second Life or Minecraft). The Pew Internet Research Study also examined the most popular forms of social networking platforms among adolescents and as of 2014, 71% of adolescents use more than one social networking site with 71% of adolescents using Facebook, 52% use Instagram, 41% use

Snapchat, 33% use Twitter, 33% use Google+, 24% use Vine, 14% have a Tumblr page, and 3% use Google Plus (Lenhart et al., 2015).

In terms of the prevalence of devices used to access technology-based communication platforms, 87% of adolescents report having a computer or access to one at home, 58% have a tablet computer, and 88% of adolescents report owning a cell phone (Lenhart et al., 2015). Evidence suggests that cell phones are emerging as the most common device used by adolescents as a means of communication (Lenhart et al., 2015; Madden et al., 2013). Though almost all technology-based communication mechanisms were originally developed for single hardware platforms, such as a computer, cross hardware platforms are now extremely common (Valkenburg, Schouten, & Peter, 2005). Cross hardware platforms allow adolescents to use any digital platform on any digital device like cell phones, tablets, or computers. For example, though email was originally designed for computers, people can now use their cell phone or tablet to send and receive messages driving up the use of devices like smartphones. Indeed, as of 2013 of the 88% of adolescents who have their own cell phone, 73% own smartphones, which provide access to the Internet (Lenhart et al., 2015). According to the same study, 91% of adolescent use smart phones to access the Internet (Madden et al., 2013). This is particularly the case among girls between 15 and 17 years of age where 95% use smartphones to access the Internet (Lenhart et al., 2015).

Further, the digital divide, defined as the economic and social inequality between categories of people in their access to and use of digital technology, is rapidly decreasing, particularly among younger generations indicating that technology-based communication transcends many previously significant demographic barriers (Lopez, Gonzalez-Barrera, & Patten, 2013). Among racial and ethnic minorities between ages 12 and 17, in 2009 only 64 % of

Hispanic and Latino adolescents and 72 % of Black adolescents reported having regular access to the Internet compared to 80% of White adolescents. Whereas, as of 2012, 88% of Hispanic and Latino adolescents and 92% of Black adolescents reported having regular access to the Internet compared to 98% of White adolescents (Lopez et al., 2013). As of 2014, 85% of Black adolescents and 71% of Hispanic and Latino adolescents report having a smartphone with Internet access compared to 71% of White adolescents (Lenhart et al., 2015). Additionally, trends in technology-based communication platform use are similar across race and ethnic groups. For example, there is no statistically significant difference between racial and ethnic groups in terms of cell phone ownership and no significant differences in the rates of technology-based communication (Lenhart et al., 2010). However, divides do still exist between low-income adolescents and those in higher income brackets. Among the parents of adolescents between 13 and 17 years of age reporting an annual income of less than \$30,000, only 73% of the adolescents report regular access to the Internet compared to those who reported annual incomes over \$30,000 where over 90% report regular Internet access (Madden et al., 2013). In sum, though some disparities still exist, the data available indicate that the vast majority of adolescents across the United States enjoy regular access to and use of digital technologies.

Taken together the research cited above demonstrates that there is a range of digital platforms available to adolescents as a means of communicating with others. Further, it highlights the ubiquitous nature of technology-based communication and Internet access among adolescents regardless of their respective backgrounds. Adolescents are using these digital platforms for a bevy of tasks including establishing relationships with peers and romantic partners (Gardner & Davis, 2013).

2.2 Technology Use in Adolescent Romantic Relationships

Adolescence is a key time for a number of developmental tasks including establishing relationships among peers and with romantic partners (Valkenburg et al., 2005). Research suggests that young people identify romantic relationships as important to their lives (Collins, Welsh, & Furman, 2009; Grover & Nangle, 2003). Prior to the growth of digital platforms, adolescents formed and reinforced these relationships in-person or over the telephone. These relationships now include a digital component. Less is known about technology-based communication and its role in romantic relationships, as previous research has tended to focus on its role in peer relationships (Subrahmanyam & Greenfield, 2008). However, the available research suggests that adolescents are using digital platforms to develop romantic relationships in a number of ways.

Recent research suggests that adolescents use digital platforms as a means of seeking out and researching potential romantic partners that they plan on later connecting with in-person. For example, approximately 24% of adolescents who report dating said that they had met a romantic partner online (Lenhart et al., 2015). Of those reporting meeting a partner online, the majority found these partners through social networking sites such as Facebook (Lenhart et al., 2015). Often, digital platforms serve as a means for identifying potential romantic partners and initiating contact with them digitally without the social anxiety that often accompanies approaching people in-person to establish contact. Indeed, mitigating social anxiety is often cited as one of the reasons for increased use of digital platforms among adolescents (Nie & Erbring, 2000; Pierce, 2009). In a recent study among early adolescents, researchers found that sixth and eighth grade students felt more comfortable texting romantic partners instead of engaging with them in-person (Christopher, Poulsen, & McKenney, 2015). Using digital platforms also allows adolescents to

become more familiar with potential partners, as social networking pages contain a large amount of personal information. Using digital platforms as a means of locating romantic partners before seeking them out in person is one of the reasons that researchers have recently claimed that contrary to earlier research on social isolation, that suggested digital technology increased adolescent feelings of isolation, digital platforms also afford opportunities for decreased isolation (Gardner & Davis, 2013; Pierce, 2009; Valkenburg et al., 2005). Thus, in addition to playing a role in the development of romantic relationships, digital platforms may offer opportunities for adolescents to feel less socially isolated.

Though limited, current research suggests that adolescents use digital spaces and platforms to also experiment with romantic relationship development by forming relationships digitally (Valkenburg et al., 2005). Adolescents who know each other in-person may choose to formally enter into a dating relationship using digital platforms (Draucker & Martsolf, 2010; Van Ouytsel et al., 2016). For example, adolescents may text or instant message a potential romantic partner to ask them on a date because there is a reduced fear of reaction or rejection than asking in-person. Recent research lends support to this idea with 50% of teens between 13 and 17 years of age letting someone know they were romantically interested in them through a social networking site (Lenhart et al., 2015). Digital platforms are making it easier for some adolescents to disclose their personal feelings that they would not do in-person and thus provide a forum for establishing relationships (Pierce, 2009; Valkenburg et al., 2005). Though there has been more research on adult use of digital platforms to establish romantic relationships with strangers through means like online dating websites (Hogan, Li, & Dutton, 2011; Koeppel, Smith, & Bouffard, 2013; Shen, Monge, & Williams, 2011) there is some evidence to suggest adolescents may also seek out strangers to form romantic relationships though this behavior was

more common in the earlier years of the Internet (Subrahmanyam & Greenfield, 2008). This suggests that adolescents are using digital platforms to engage in romantic relationships with people they know in-person. Approximately 76% of adolescents between 13 and 17 years of age report only dating romantic partners they met first in-person (Lenhart et al., 2015).

Though used to seek out and establish relationships, research suggests that adolescents may use digital platforms primarily to reinforce existing romantic relationships, as these platforms afford adolescents almost constant accessibility to their romantic partners (Lenhart et al., 2015; Subrahmanyam & Greenfield, 2008; Van Ouytsel et al., 2016). Digital platforms allow adolescents to transcend geographic and temporal boundaries in order to connect and communicate with romantic partners in order to reinforce their romantic ties (Gardner & Davis, 2013). Researchers are quick to note that due to the limited research on technology-based communication between romantic partners, there are little data examining how this communication occurs, under which types of circumstances, and through which types of digital platforms (Subrahmanyam & Greenfield, 2008). However, a recent study indicates that 92% of adolescents in a romantic relationship text their partners regularly, 70% spent time posting on each other's social media sites, and 69% spent time instant messaging with their partner (Lenhart et al., 2015). The frequency of technology-based communication may be explained in part by recent qualitative focus group studies from Gardner and Davis (2013), which suggest that relationships may be reinforced through two mechanisms that are unique to digital platforms and are characterized by extensive communication via digital platforms. The first is that adolescents now use "microcoordination", using digital platforms to make on-the-fly arrangements to meet up versus more formal planning that was common in the pre-digital era (Gardner & Davis, 2013). Other research suggests that this shift to microcoordination of social gatherings has

resulted in adolescents becoming dependent on their digital devices in order to feel a part of their social circles and connected to their romantic partners (Ling & Yttri, 2002). Thus, microcoordination may increase feelings of connectedness but also further increases adolescent dependence on digital devices as a means of staying in touch with romantic partners. The second mechanism to reinforce relationships has been dubbed “virtual taps on the shoulder” (Gardner & Davis, 2013). This means that adolescents establish and maintain a sense of connection with romantic partners when physically apart from one another. For example, adolescents report carrying on conversations via text throughout the day, checking in on each other to get updates on what the other person is up too (Gardner & Davis, 2013). These conversations are often characterized by breaks while the adolescents are in school or during meals but are picked back up as soon as other activities cease. Prior to constant access to digital devices, conversations between romantic partners were typically limited temporally and often geographically. Some evidence suggests that these constant technology-based communications can increase adolescent feelings of belonging and intimacy, which are both beneficial to forging social bonds during adolescence and later in life (Gardner & Davis, 2013). Recent research lends support to Gardner & Davis’s (2013) findings. Lenhart et al. (2015) found that 44% of adolescents feel that social media makes them emotionally closer to their romantic partner and 65% of boys and 52% of girls think technology-based communication makes them feel more connected with what their romantic partners are doing when they aren’t with them.

Finally, just as digital platforms are likely used to seek out, establish, and reinforce romantic relationships, adolescents report that they play a salient role in ending romantic relationships. As with the use of digital platforms to experiment with romantic relationships, digital platforms minimize emotional risks posed by face-to-face communication. For example,

in a series of focus groups with adolescents, Gardner & Davis (2013) found that they regularly used text messages or Facebook to end relationships rather than in-person. In-person break-ups were seen as being socially difficult and emotionally trying. Digital platforms help adolescents avoid the discomfort that accompanies in-person break-ups where they might have to manage their romantic partner's unfiltered and potentially unexpected response. As of 2015, approximately 27% of adolescents between 13 and 17 years of age report breaking up with a romantic partner through text message (Lenhart et al., 2015). Just as digital platforms may provide avenues for the development of intimacy and self-disclosure, they also present opportunities to avoid emotional risks, which may be detrimental to adolescent development. Some argue that romantic experiences offer important developmental opportunities among adolescents for maturation of intimacy, sexuality, identity, and autonomy (Collins et al., 2009). In the same way, ending relationships is connected to adolescent development as the emotional risks posed by ending relationships often inform subsequent relationships (Connolly & McIsaac, 2009). This interpretation suggests that by avoiding emotional risks, adolescents are losing out on developing skills to help them build healthy relationships across their developmental trajectory. It is clear that though digital platforms can play a positive role in adolescent development of romantic relationships, they also pose risks to adolescent development and well-being. In addition to the risk that adolescents are not learning important social skills with respect to taking emotional risks, there are other risks posed by these mediated forms of communication and interaction. One of the biggest risks posed by technology-based communication is its facilitation of "electronic aggression" (David-Ferdon & Hertz, 2007).

Electronic aggression

Electronic aggression is often defined to encompass a large number of digitally based behaviors including bullying, harassment, teasing, spreading rumors, making threatening or aggressive comments, and making rude or hurtful comments (David-Ferdon & Hertz, 2007). The role technology-based communication and technology play in adolescent health is still an emerging field of investigation, but there have been numerous studies examining the prevalence of electronic aggression between adolescents and their peers, often referred to as cyberbullying. Cyberbullying occurs when an individual or a group of people use digital platforms to deliberately and repeatedly harass or threaten another individual or group (Ybarra & Mitchell, 2004). Due to measurement variations, researchers estimate that between four and 21% of adolescents perpetrate cyberbullying (Kowalski & Limber, 2007; Williams & Guerra, 2007; Ybarra, Espelage, & Mitchell, 2007). In addition to being fairly common, with up to 34% of adolescents reporting experiencing cyberbullying, being a victim of cyberbullying is associated with a number of negative psychosocial and health issues including emotional distress, increased social anxiety, weapon-carrying at school, and depression (Hawker & Boulton, 2000; Ybarra et al., 2007). Researchers examining electronic aggression between peers suggest that this form of abuse has the potential to cause great harm to the health and well-being of adolescents (Hawker & Boulton, 2000). In a recent study, adolescents described having to manage a number of stressors posed by engaging with others on social media including managing inappropriate posts, social comparison and jealousy, and a lack of privacy and control over what is being shared (Fox & Moreland, 2015).

However, in terms of adolescent romantic relationships, the majority of previous research has conceptualized dating abuse as occurring in-person. In turn, this previous research has not measured dating abuse in such a way as to determine mode of delivery.

2.3 Adolescent Dating Abuse

In-person adolescent dating abuse

Adolescent dating abuse is a serious problem in the United States. The CDC (2012) defines dating abuse perpetration as the use of physical, sexual, psychological abuse within a dating relationship. Although dating abuse can occur in-person and through technology, dating abuse researchers have previously focused on abuse occurring in-person or conceptualized as occurring in-person in the case of psychological abuse and sexual coercion (Saltzman, Fanslow, McMahon, & Shelley, 2002). In the 2011 Youth Risk Behavior Survey (YRBS), 9.4% of adolescents experienced physical dating abuse at the hands of a boyfriend or girlfriend in the past 12 months (CDC, 2011). Further, in the National Longitudinal Study of Adolescent Health (Add Health), 32% of adolescents reported experiencing psychological or physical dating abuse in the past 18 months (Halpern, Oslak, Young, Martin, & Kupper, 2001). Other estimates of dating abuse come from regional studies and tend to vary widely due to differences in sample size and study methodology (for review see Foshee & Matthew, 2007). Part of the difficulty in examining dating abuse is due to the range of definitions used in research (Ismail, Berman, & Ward-Griffin, 2007). However, despite these inconsistencies, these studies suggest high rate of dating abuse perpetration. For physical dating abuse perpetration prevalence ranges from 11% to 41% and for psychological abuse ranges from 14% to 82% (for review see Foshee & Matthew, 2007).

Health consequences and correlates of adolescent dating abuse

In addition to being common during adolescence, dating abuse is associated with multiple negative health outcomes. Several longitudinal studies highlight the consequences of victimization which include physical injury (O'Leary et al., 2008), depression (Ackard et al., 2007), cigarette use (Foshee et al., 2013), suicidal ideation, substance use (Roberts et al., 2003), and subsequent abusive relationships in young adulthood (Exner-Cortens et al., 2012; Halpern et al., 2009; Smith et al., 2003). A recent study using a longitudinal approach suggests that depression is a consequence of both dating abuse perpetration and victimization (Johnson, Giordano, Longmore, & Manning, 2014). Cross-sectional studies suggest that dating abuse perpetration is associated with suicidal thoughts (Banyard & Cross, 2008), sexual behavior, and unhealthy weight control (Kim-Godwin, Clements, McCuiston, & Fox, 2009).

Cyber dating abuse

Although there have been a number of studies examining electronic aggression between peers, there have been far fewer studies examining electronic aggression between romantic partners (i.e. romantic abuse that occurs electronically via computers, blogs, mobile phones and other online social networking mechanisms) to psychologically and sexually abuse the people with whom they are romantically involved (Zweig et al., 2013a). Due to the ubiquity of digital platforms and the role they play in adolescent relationships, it is important to better understand how digital platforms and technology-based communication may be used as tools to abuse romantic partners. In recent years there has been a call from researchers to further examine electronic aggression and its role in adolescent romantic relationships particularly in light of the negative consequences posed by adolescent dating abuse (Cutbush et al., 2012; David-Ferdon & Hertz, 2007). A recent study reported that 26% of adolescents experienced CDA in the previous

year (Zweig et al., 2013a). This prevalence rivals that of in-person psychological abuse (for review see Foshee & Matthew, 2007). Similar to IPDA, there is evidence to suggest that CDA is also associated with negative health outcomes such as depression and risky sexual behavior (Zweig, Lachman, Yahner, & Dank, 2013b).

While there has been over twenty years of research on the etiology of IPDA including psychological, sexual, and physical abuse, there has been little research on the etiology of CDA. The first study to identify IPDA among adolescents as a problem was published in 1981 (Henton, Cate, Koval, Lloyd, & Christopher, 1983; Makepeace, 1981), whereas the first study to recognize CDA was not published until 2012 (Bonomi et al., 2012). The paucity of attention to CDA has also contributed to the lack of a common definition or terminology. Researchers have referred to this new mode of dating abuse as CDA (Borrajo et al., 2015a; Dick et al., 2014; Zweig et al., 2013a), cyber-aggression (Schnurr et al., 2013), electronic dating violence/aggression (Cutbush et al., 2012; Hinduja & Patchin, 2013), technology-assisted dating abuse (Stonard et al., 2014), and digital dating abuse (Reed, Tolman, Ward, & Safyer, 2016). Throughout this dissertation, I use the term CDA to refer to both psychological and sexual abuse delivered through technology-based communications because it is the term most frequently used in the literature (Borrajo et al., 2015a). Similar to IPDA, CDA is comprised of several types of dating abuse including psychological and sexual abuse. A wide range of behaviors including monitoring a romantic partner's whereabouts and activities via technology (Burke et al., 2011; Lyndon et al., 2011), controlling a partner through excessive contact or harassment (Stonard et al., 2014), sending mean, rude or hurtful messages (Hinduja & Patchin, 2013), sending threatening or sexually coercive messages (Zweig et al., 2013a), and spreading rumors or sharing

private pictures or videos with social networks (Hinduja & Patchin, 2013; Lyndon et al., 2011) are considered indicators of CDA.

Some researchers posit that CDA is new mode of psychological and sexual abuse executed through new modalities, and point to the co-occurrence of in-person and cyber psychological abuse as evidence to support this assertion (Borrajo et al., 2015a). A number of studies have identified CDA perpetration as a correlate of IPDA perpetration (Cutbush et al., 2012; Dick et al., 2014; Hinduja & Patchin, 2013; Zweig et al., 2013a). For example, Zweig et al. (2013) found that 58% of adolescents who reported perpetrating in-person physical dating abuse also perpetrated CDA. Additionally, evidence suggests CDA and IPDA share other similarities. For example, as with IPDA (O'Leary et al., 2008) adolescents are more likely to report CDA victimization than perpetration (Cutbush et al., 2012; Temple et al., 2016).

Others suggest that though they may share features in common, abuse that occurs through technology may be a qualitatively different phenomenon than abuse that occurs in-person (Stonard et al., 2014). While adolescents report perpetrating both IPDA and CDA in previous studies examining the prevalence of IPDA and CDA, there is a significant number of adolescents who report perpetrating only CDA (Cutbush et al., 2012; Hinduja & Patchin, 2013; Zweig et al., 2013a). For example, Zweig et al. (2013) examined the co-occurrence of CDA perpetration and IPDA finding that 25% of adolescents who reported perpetrating non-sexual CDA only perpetrated this mode of abuse. Similarly, Cutbush et al. (2012) found that a significant group of adolescents only perpetrated CDA. Therefore, some adolescents perpetrate IPDA, but not CDA, and others perpetrate CDA but not IPDA (Cutbush et al., 2012; Zweig et al., 2013a). Temple et al. (2016), argue that CDA perpetration should be conceptualized as a distinct type of dating abuse that may serve as a vehicle for psychological abuse but that also creates unique ways for

abusing a partner that cannot occur in-person. Specifically, certain dimensions of CDA perpetration, such as the ability to perpetually monitor one's partner, may have different underlying motivations than IPDA perpetration. For example, there is some evidence to suggest that monitoring a partner or potential partner is driven by a desire to build intimacy or a relationship with that individual rather than in an effort to control them (Lowry, Zhang, Wang, Wu, & Siponen, 2013). Additionally, technology-based communication differs from in-person or telephone/voice communication since it can easily migrate from what is arguably private interactions into public spaces along with giving romantic partners constant access to one another without geographic or temporal constraints and spread information instantly across social networking sites (Draucker & Martsolf, 2010; Reed et al., 2016). These differences in capabilities and motivations suggest that CDA may be a new type of abuse rather than mode.

2.4 Theoretical Base Used to Examine Past Research on Dating Abuse

There are a number of theories that have guided research on IPDA. As described above, several researchers suggest that CDA may operate as a new mode of dating abuse rather than as a qualitatively different phenomenon (Borrajó et al., 2015a; Stonard et al., 2014). If CDA is a new mode of dating abuse, then it is appropriate to use the same theories to examine and inform intervention development. Below are descriptions of several of the theories frequently used in dating abuse research and used to develop the intervention evaluated in the *Moms and Teens for Safe Dates* RCT which inform the risk and protective factors examined in Aim 2.

Theoretical perspectives such as Bandura's social learning theory, suggest that adolescent and children behavior develops as a function of observation and imitation of other people's behavior which is subsequently reinforced (Bandura, 1977). Social learning theory is the predominant theory in dating abuse research. For example, with respect to explaining dating

abuse, research suggests that exposure to violence and associated rewards internalize norms that are more accepting of violence (Carr & VanDeusen, 2002; Ehrensaft et al., 2003a; Foshee, Bauman, & Linder, 1999; Kinsfogel & Grych, 2004; Narayan, Englund, Carlson, & Egeland, 2014; Reitzel-Jaffe & Wolfe, 2001; Rosenbaum & O'Leary, 1981). Social learning theory is also consistent with the intergenerational transmission of intimate violence which explains that through observational learning processes and witnessing violence among family members, a child is more likely to use violence as an adult (Dodge, Pettit, Bates, & Valente, 1995; Mihalic & Elliott, 1997). If a child sees a parent use violence in order to address conflict or to control or dominate another person, social learning theory suggests they may internalize this behavior and subsequently model it in their own relationships (Bandura, 1977; Brendgen, Vitaro, Tremblay, & Lavoie, 2001). Social learning theory also acknowledges media as well as cultural factors also exert influence on an individual's perception of violence in romantic relationships. For example, some researchers suggest that through media such as film, video games, and television adolescents are exposed to unhealthy models of romantic relationships (Anderson et al., 2003; Barongan & Hall, 1995). Peers also play a key role in dating abuse per social learning theory. Evidence suggests that exposure to friends who have experience with dating abuse is associated with both dating abuse perpetration and victimization as well as predictive of subsequent relationship violence (Arriaga & Foshee, 2004).

Social learning theory suggests that individuals exposed to domestic violence as children may also be more likely to approve of violence as a means of responding to conflict or punishing what they perceive as wrong-doing (Mihalic & Elliott, 1997). Domestic violence exposure may lead children to be more accepting of violence in relationships and believe that violence is also an effective means of conflict resolution that results in positive consequences. These children are

subsequently not exposed to the positive consequences associated with constructive conflict resolution techniques because adults who typically use violence to resolve conflict do not have such skills (Gottman, 1993; Schwartz, Hage, Bush, & Burns, 2006). One of the most consistent predictors of IPDA perpetration is family violence (Jouriles, McDonald, Mueller, & Grych, 2012; Wolfe, Wekerle, Scott, Straatman, & Grasley, 2004). Alongside social learning theory, researchers suggest that emotion dysregulation (i.e. anger and anger dysregulation) are also linked with family violence. Specifically, adolescents exposed to family violence struggle to cope with the emotional dysfunction in the home and in turn have difficulty controlling their behaviors (Gratz et al., 2009). There is evidence to suggest that emotional dysregulation mediates the relationship between exposure to family violence and IPDA perpetration for girls (Wolf & Foshee, 2003) and boys (Kinsfogel & Grych, 2004). Some have suggested that there are additional factors that lead to IPDA (Follette & Alexander, 1992). Such factors draw from other theories including social control theory.

Social control theory suggests that deviant behavior is inherent in individuals and is more likely to develop when an individual's social bonds to society are weak than when those bonds are strong (Hirschi & Stark, 1969). Social bonding is created in part through the influence of attachment to and socialization from family, peers, and school (Hirschi, 1969; Krohn, Massey, Skinner & Lauer, 1983). Attachment is formed through ties with people expressing conventional norms such as parents, friends, or school administrators who are likely to believe in society's rules (Hirschi, 1969). For example, an adolescent who is strongly bonded to their family is presumed to be less likely to engage in deviant behaviors. Factors such as parental monitoring can be considered helpful in forming such bonds. Parental monitoring helps minimize adolescent involvement with delinquent peers and reduces their involvement with violent behaviors

including IPDA (Dishion & McMahon, 1998; Swahn et al., 2008). Without attachment to family, peers, or school adolescents may not be able to internalize prosocial norms against delinquent behavior and that disapprove of dating abuse (Hirschi, 1969).

Unlike either social learning theory or social control theory, feminist theory suggests that dating abuse is a result of underlying power and control inequities between men and women resulting in a patriarchal societal system (Dobash, Dobash, Wilson, & Daly, 1992). Researchers suggest that power inequality caused by a prevailing power structure of male dominance and female subservience leads to the manifestation of dating abuse (Lloyd, 1991). For example, there is evidence suggesting gender stereotypes- attitudes relating to how men and women should behave- are associated with dating abuse perpetration (Foshee, Karriker-Jaffe, Reyes, Ennett, & Suchindran, 2008).

Extension of theories to CDA perpetration

As discussed earlier, theories used to explain IPDA may be applicable to CDA. This is due in part to the argument that CDA is simply a new mode for delivering psychological and sexual abuse and therefore likely influenced by the same theoretical mechanisms. Further, some researchers suggest that traditional socialization- a key concept in both social learning theory and social control theory- that used to occur in-person is now frequently learned through technology (O'Keeffe & Clarke-Pearson, 2011). However, there is theoretical support that suggests digital behavior is often different from in-person behavior and points to the potential for different motivations for perpetrating dating abuse through technology.

2.5 Theoretical Explanation for Potential Differences Between Digital and In-Person Behaviors

While there is empirical evidence that suggests IPDA and CDA may share a similar etiology, such as the strong correlation between the two modes of dating abuse (Dick et al., 2014; Zweig et al., 2013a), there is also theoretical support for an argument suggesting that adolescents behave differently in digital environments than they do in-person. Therefore, adolescents who perpetrate CDA may have different motivations from those that perpetrate IPDA. In turn, these differences may point to differences in the etiology of CDA. Specifically, the Online Disinhibition Effect suggests that different factors contribute to differences between in-person and digital behavior.

Online Disinhibition Effect

The Online Disinhibition Effect suggests that the social contexts afforded by digital platforms may prompt individuals who may behave one-way in-person to behave differently online because they may become “disinhibited” while using digital platforms (Suler, 2004). Thus, based on the Online Disinhibition Effect, an adolescent who would not be abusive in person may become abusive digitally. Inspired by evidence suggesting that individuals behave very differently in digital spaces than they do in-person, Suler (2004) proposed that online disinhibition operates in two specific ways: as benign disinhibition and as toxic disinhibition. Benign disinhibition can be described as when individuals use digital platforms in positive ways, for example to show kindness, offering help to others, or sharing personal things like their emotions, fears, and dreams (Suler, 2004). This form of disinhibition may be beneficial to adolescents. Digital platforms can serve as tools for identity formation among adolescents (Subrahmanyam & Greenfield, 2008) and benign disinhibition can often be characterized by

individuals exploring new dimensions of their personalities (Suler, 2002). However, toxic disinhibition is characterized by negative digitally based behaviors. For example, when individuals use digital platforms to hurt others via criticism or threats, or explore territory such as crime or violence that they would usually never explore in-person, they are engaged in toxic disinhibition. Whereas benign disinhibition provides opportunities for individuals to better understand and develop their identities, toxic disinhibition does not result in any personal growth and can be harmful to self and others (Suler, 1999). CDA is an example of toxic disinhibition. Specifically, an adolescent may experience toxic disinhibition in that though they would not perpetrate IPDA, they feel comfortable perpetrating CDA.

Suler (2004) is quick to point out that the conceptual dichotomy of benign and toxic disinhibition can often be complex and difficult to disentangle empirically. For example, in the case of romantic relationships, an adolescent may use digital platforms to quickly share intimate secrets with a romantic partner but then become overwhelmed by the rapidity of their intimacy, which may result in feelings of anxiety that produce more abusive reactions/communications. So what began as benign disinhibition, an individual using digital platforms to share their feelings that they would otherwise keep to themselves, quickly devolves into a somewhat toxic situation where they are left with emotional issues that they are ill equipped to manage.

Suler (2004) proposes six factors to explain the disinhibition effect: Dissociative anonymity, invisibility, asynchronicity, solipsistic introjection, dissociative imagination, and minimization of status and authority. Different factors may exert more or less influence on an individual's disinhibition. However, the factors often influence each other and may amplify disinhibition depending on which influence is enacted in any given individual (Suler, 2004). Each of the six factors, some of which are more important and others that are less important as

an explanation for dating abuse resulting from the disinhibition effect, are described in detail below.

Dissociative Anonymity. Digital platforms allow a certain level of anonymity, or the ability for an individual to hide their true identity. For example, it is possible to create fake email accounts or IP addresses (which operate like digital addresses telling others where you are located) in an effort to mask one's true identity. Suler (2004) suggests that the anonymity afforded by digital platforms allows people to disassociate their digital actions from their in-person identity. In effect, dissociative anonymity allows individuals to be unaccountable for their online actions, with some people going as far as creating an entirely different online identity that is completely separate from their in-person identity.

Dissociative anonymity is an unlikely explanation for dating abuse due to a toxic disinhibition effect when adolescents know one another in-person, but may be more of an explanation when dating relationships occur purely online. Adolescents may have romantic relationships that occur both in-person and online or relationships that occur entirely online. Though there is limited previous research on adolescent relationships occurring entirely online, there is some evidence to suggest adolescents may seek out strangers to form romantic relationships though this behavior was more common in the earlier years of the Internet (Subrahmanyam & Greenfield, 2008). There are no studies that report the prevalence of adolescents engaging in purely digital relationships but the idea of dissociative anonymity has garnered media attention in recent years with several high profile cases of individuals engaging in online romantic relationships with strangers only to find out that their partner was in fact an invented online persona. In popular media, the term 'catfish' exemplifies the idea of dissociative anonymity. To 'catfish' someone is to pretend to be someone who you are not on social media.

The term was derived from a 2010 documentary film titled “Catfish”, where the filmmaker learned that his online girlfriend was not a 19-year old model as he believed but rather a married middle aged woman (Joost & Schulman, 2010). Since the release of “Catfish”, there have been multiple media stories about individuals who discover their romantic partners online are in fact completely different people than those they pretend to be digitally. In these types of digitally based romantic relationships, dissociative anonymity may promote CDA as an individual can invent an abusive online persona.

Invisibility. People typically cannot physically see or hear each other when using digital platforms therefore they have more courage to do things not typical of their day-to-day behavior (Suler, 2004). Digital platforms prevent people from picking up on emotional cues such as an angry expression on a person’s face during a conversation, or the tone in which someone says something, or other physical social cues that are typical of face-to-face interactions and that often affect the reading of information shared between individuals (Derks, Fischer, & Bos, 2008). Suler (2004) posits that in the absence of physical visibility, individuals feel less inhibited and more inclined to do things they otherwise would be reluctant to do. Invisibility is a likely explanation for a disinhibited effect that leads to dating abuse. For example, in terms of a romantic relationship an adolescent may feel more comfortable making disparaging comments directed at their romantic partners digitally than in-person as they won’t have to face the emotional response of their partner when using the former. Additionally, invisibility affords adolescents the opportunity to break boundaries that they would not do in-person. For example, an adolescent who would be respectful of a person’s physical boundaries in-person, such as not breaking into a locked room or opening their romantic partners locker to search it at school, may disregard such boundaries digitally. This factor of disinhibition may lead to abusive behaviors

such as an adolescent hacking into their partner's Facebook account to read their messages or email accounts because they cannot be seen when they would never participate in similar in-person behaviors.

Asynchronicity. When using digital platforms, the communication is often not happening in real time, unlike in-person conversations that are characterized by immediate back and forth between participants, brief conversations may occur over hours, days, weeks or even months (Suler, 2004). Asynchronicity likely operates in two ways. First, asynchronicity may allow adolescents the opportunity to closely examine what they say and to carefully choose their words. In this case, someone who might otherwise have difficulty in face-to-face interactions has the time needed to formulate their reply. For example, in an in-person conversation individuals typically provide continuous feedback on what is being said which guides the conversation. However, asynchronicity may also exacerbate negative emotions fostering toxic disinhibition. For example, if a couple has a disagreement and they are arguing in-person they are able to immediately respond to their partner, pick up on physical emotional cues indicating when their partner is hurt, and a more equitable dialogue or back and forth can occur between the partners. However, if that same argument occurs digitally, due to time delays between messages that are inherent to technology-based communication, the emotional intensity of the disagreement has time to increase. For example, one partner may send a series of messages without any response or with a delayed response shifting the dynamic of the conversation. Asynchronicity may also exacerbate toxic disinhibition caused by invisibility as romantic partners send increasingly hurtful and abusive messages without facing the emotional response or reaction of their romantic partner.

Solipsistic Introjection. In the absence of visual cues, people tend to project characteristics or personality traits to interactions with others on digital platforms. For example, in reading an email from a stranger, one's imagination might begin to put together a picture of who sent the message, what they look like, and how they sound when talking. Individuals may also project their own voice onto the message received in effect "talking to themselves" which Suler suggests promotes disinhibition as talking to oneself is psychologically easier than talking to others. Solipsistic introjection can often lead to benign disinhibition, as individuals feel more comfortable sharing information and expressing their feelings when they believe they are talking to themselves. Solipsistic introjection may encourage adolescents to project their own voice, desire, and needs onto their romantic partners when they are in relationships that occur entirely online or those where the adolescents rarely see each other and thus their relationship has developed digitally rather than face-to-face. These projections may lead to problems, as they are inventions of one's mind rather than reality. For example, a romantic partner may become upset or aggressive when their partner fails to match up to the traits they have projected on to them leading to CDA.

Dissociative Imagination. Dissociative imagination occurs when people feel that a character or persona they created in their mind exists only in a digital space and not in real life (Suler, 2004). Individuals, consciously or unconsciously split the online world from the real world and the online world does not need to conform to the rules that govern real-world interactions. For example, if an individual plays online role-playing games, they do not play the game as themselves, but as a character that can behave in radically different ways than the individual would in real life. However, they may view that character's actions as being the actions of another person rather than actions they are perpetrating themselves (Suler, 2004; Yee,

2006). With dissociative imagination an individual is creating a full-fledged online identity not attempting to hide their identity, as is the case of dissociative anonymity. In the case of a romantic relationship, an individual who does not perpetrate dating abuse in-person may do so because they are adhering to norms that say dating abuse is wrong. However, the same individual may feel that they do not have to adhere to the rules or norms that govern their in-person behavior when interacting digitally. Thus they may adopt an abusive persona digitally that does not exist in-person as they feel unchained from face-to-face social norms and structures. This factor may explain why certain individuals perpetrate CDA but do not perpetrate in-person abuse as they have two distinct identities.

Minimization of Status and Authority. The final factor described by Suler (2004) as a key contributor to online disinhibition is minimization of status and authority in online relationships where there is a lack of visual cues that typically mark authority in face-to-face relationships, such as the manner in which a person is dressed, their body language or other similar environmental cues, thereby reducing the effect of that person's authority or status as a partner or equal. This last factor is less related to dating abuse than the previous factors since it focuses more on power dynamics with authority figures.

Though all of the factors described by Suler in the Online Disinhibition Effect may contribute to CDA, invisibility and asynchronicity are particularly relevant for promoting disinhibition against dating partners that are known in-person while dissociative anonymity and solipsistic introjection, are more likely to promote digital abuse against dating partners that are entirely digitally based. Dissociative imagination likely influences both in-person and digital-only relationships. The Online Disinhibition Effect suggests that there are likely adolescents who may perpetrate dating abuse only digitally as a result of toxic disinhibition, and not IPDA.

Digital platforms may provide the convenient circumstance for certain individuals to lash out at their romantic partners when they otherwise would not. This idea lines up with the theoretical framework set forth by Subrahmanyam and Greenfield (2008) about adolescent online communication that contends that in-person and digital worlds are psychologically connected but the digital world can often serve as a “playground” for identity development where a teen may try out an identity that differs from their in-person identity. This online identity may in turn be abusive whereas the in-person identity is not.

2.6 Background Summary

Taken together, this background suggests several things. First, while we know that adolescents are using technology-based communications as a central means of communicating, we know little about the role technology plays in adolescent romantic relationships. In order to understand how adolescents may be using technology in unhealthy or harmful ways, we first must have a clear understanding of its role in romantic relationships. This information can also be used to inform interventions targeting adolescent romantic relationships. Second, evidence suggests that adolescents are using technology to abuse one another in their romantic relationships (Zweig et al., 2013a). However, we cannot design effective interventions to prevent such abuse without an understanding of the risk and protective factors associated with CDA. There is literature to suggest that CDA perpetration both may or may not share a similar etiology with IPDA (Cutbush et al., 2012; Zweig et al., 2013a). If CDA and IPDA perpetration share a similar etiology, it is likely that CDA is a new *mode* of dating abuse rather than a new *type* of dating abuse and therefore IPDA and CDA perpetration will likely share similar risk and protective factors (Zweig, Lachman, Yahner, & Dank, 2014). However, there is also evidence to suggest that CDA is a new *type* rather than a new *mode* of dating abuse (Stonard et al., 2014;

Suler, 2004). If CDA is a new type of dating abuse, it is unlikely that it will share risk and protective factors with IPDA. This conflicting literature points to the need for additional evidence to determine if CDA is in fact a new *mode* of dating abuse or a new *type* of dating abuse with a distinct etiology from IPDA. If CDA is a distinct type of dating abuse, then theoretically new interventions will need to be developed. However, if CDA and IPDA share a common etiology, existing interventions can theoretically be updated to target all modes of dating abuse. This dissertation aims to address these gaps through two manuscripts in the two subsequent chapters.

CHAPTER 3: “IT’S A BAD THING...BUT IT’S A GOOD THING TOO”: EXAMINING TECHNOLOGY USE AND ABUSE IN ADOLESCENT ROMANTIC RELATIONSHIPS (MANUSCRIPT #1)

3.1 Introduction

Adolescence is a key time for many developmental tasks, including the formation of romantic relationships. While it is difficult to clearly define what constitutes “dating” among adolescents, it is estimated that the majority of adolescents in the US have been involved in a romantic or dating relationship by the end of high school (Lenhart et al., 2015; Manning, Longmore, Copp, & Giordano, 2014). Further, evidence shows that adolescent romantic relationships form the “scaffolding” that supports the development of subsequent romantic relationships during adulthood (Meier & Allen, 2009; Rauer, Pettit, Lansford, Bates, & Dodge, 2013). Romantic experiences offer important opportunities to adolescents for maturation of intimacy, sexuality, identity, and autonomy, which are all key developmental tasks (Collins, 2003; Furman, 2002). At the same time, in the past decade there has been a rapid expansion in the use of technology-based communication, which provides new contexts to undertake key developmental tasks including the development of romantic relationships (Davis, 2012). In fact, recent research suggests that text messaging has become the dominant form of adolescent communication (Lenhart et al., 2015; Lenhart et al., 2010).

Despite calls for research examining the role technology-based communication plays in shaping adolescent development (Korchmaros, Mitchell, & Ybarra, 2013; Subrahmanyam & Smahel, 2011), there has been relatively limited exploration of the role technology plays in

adolescent romantic relationships. In this paper, we first review the literature on technology use among adolescents and technology use in romantic relationships. We then use data collected from focus groups to explore how adolescents use technology in their relationships and how communication technology influences these relationships. Findings can inform subsequent research on adolescent use of technology in romantic relationships and also be used to ensure programs encouraging healthy romantic relationships accurately reflect both how adolescents use technology and how it influences their romantic relationships.

Digital technology and adolescents

Digital technology (e.g. smartphones, computers, tablets, etc.) is an integral part of everyday life for adolescents throughout the United States (Subrahmanyam & Greenfield, 2008). For example, 87% of adolescents report having a computer or access to one at home, 58% have a tablet computer, and 88% of adolescents report owning a cell phone (Lenhart et al., 2015). Of the 88% of adolescents who have their own cell phone, 73% own smartphones, which provide access to the Internet (Lenhart et al., 2015). In 2011, only 23% of adolescents had smartphones (Lenhart et al., 2015). Adolescents are increasingly using technology as their central means of communication. More than half (56%) of adolescents report going online several times a day and exchange an average of 30 text messages per day (Lenhart et al., 2015). As of 2014, over 90% of adolescents in the U.S. between 13 and 17 years of age with cellphones report text messaging daily and approximately 71% of adolescents report having accounts with more than one social network site (Lenhart et al., 2015).

Researchers suggest that technology has both positive and negative influences on adolescents. Some suggest that technology-based communication can help decrease feelings of social anxiety - irrational anxiety caused by social interactions (NIMH, 2013)- and be beneficial

to adolescent identity construction (Subrahmanyam & Smahel, 2011; Valkenburg et al., 2005). Others suggest that technology-based communications can help enable self-disclosure (see Valkenburg & Peter, 2009 for review). Whereas other evidence suggests that technology-based communication is associated with social isolation (Sander, Field, Diego, & Kaplan, 2000), loneliness and depression (Morahan-Martin & Shumacher, 2003), and cyberbullying (Fogel & Nehmad, 2009). Researchers suggest that both positive and negative influences of technology on adolescent lives is related to decreased inhibition also referred to as emotional detachment (Mehari, Farrell, & Le, 2014). Specifically, technology supports disinhibition in such a way that individuals are able to separate their in-person interactions from their technology-based ones (Suler, 2004). However, no previous studies have examined how disinhibition/emotional detachment may influence adolescent romantic relationships.

Romantic relationships, adolescents, and technology

The role technology-based communication plays in adolescent romantic relationships is still an emerging topic of investigation. However, available research suggests that adolescents frequently use technology in their romantic relationships (Torres, Robles, & De Marco, 2013). In terms of the dynamics between partners, some researchers hypothesize that technology-based communication may be helpful in fostering intimacy between romantic partners (Blais et al., 2008; Caughlin & Sharabi, 2013). Torres et al. (2013) found that adolescents frequently use instant messaging devices as a means of feeling connected to their romantic partners.

Others suggest that technology-based communication can contribute to unhealthy romantic relationships including cyber dating abuse (CDA)(Subrahmanyam & Smahel, 2011; Zweig et al., 2013a). CDA is defined as the use of technology (e.g. social networking sites, cellphones, instant messaging software) to abuse and control a romantic partner (Zweig et al.,

2013a). This mode of abuse has only recently begun to be examined however research suggests that it creates new mechanisms for abuse. For example, Hinduja and Patchin (2011) found that around 10% of adolescents reported that their partner told them what they should or should not do online. A recent study reported that 26% of adolescents experienced CDA in the previous year (Zweig et al., 2013a). This prevalence rivals that of in-person psychological abuse which local studies estimates ranged from 14% to 82% (Foshee & Matthew, 2007). Further, researchers have begun exploring cyberstalking wherein an individual perpetrates a series of obsessive and intrusive behaviors aimed at spying on a romantic partner through technology (Logan, 2010; Fox et al., 2015; Marshall, 2012). While stalking is not a new phenomenon, technologies provide a myriad of new tools such as smartphones with GPS software and social networking websites, which may facilitate stalking (Spitzberg & Cupach, 2007; Botuck et al., 2009; Lyndon, Bonds-Raacke, & Cratty, 2011). While no studies have specifically examined the longitudinal health outcomes of abuse that occurs through technology, several studies highlight the consequences of dating abuse victimization which include physical injury (O'Leary et al., 2008), depression (Ackard et al., 2007), cigarette use (Foshee et al., 2013), suicidal ideation, substance use (Roberts et al., 2003), and subsequent abusive relationships in young adulthood (Exner-Cortens et al., 2012; Halpern et al., 2009; Smith et al., 2003).

Current Study

Although there is evidence to suggest technology plays a key role in the lives of adolescents, the role technology plays in their romantic relationships remains unclear. Though there may be positive influences, due to the potential negative influence of technology on adolescent romantic relationships coupled with the importance of these early relationships, the current study examines how adolescents describe the role technology plays in their romantic

relationships along with their perceptions what influences their use and its respective impact on their relationships.

3.2 Methods

Procedure

We conducted 10 focus groups with adolescents from a large public high school in metro Atlanta from March to May 2015. As the goal of the current study was to understand adolescent perspectives on the role technology plays in adolescent romantic relationships, focus groups were an appropriate data collection method. This is due in part to the nature of technology being a social phenomenon, which lends itself to group discussion. Further, focus groups also allow access to participant who may find one-on-one interviews intimidating (Morgan, 1988). Focus groups also allow insights in to one's personal and social life (Kitzinger, 1995), both of which are of interest in the current study.

We posted fliers around the high school advertising the study that detailed the inclusion criteria: 1) Participants need to be between 16 and 18 years of age and 2) Use technology to communicate with others. All students in junior and senior classes were given a study packet that contained a parental informed consent form along with a study flier which had the study website address on which there was a detailed description of the study and a contact information sheet so we could call the potential participant once they returned a signed parental informed consent. A total of 568 packets were distributed to students.

All of the focus groups were held immediately following school during the week. A total of 89 students returned a signed parental informed consent. Six potential participants could not be reached and were withdrawn from the study. Focus groups were single gender due to the nature of the study topic and in an effort to encourage open dialogue about dating and

technology. More girls returned signed parental consent forms than boys; therefore, there were two more all female focus groups than the number of all male focus groups. Once a participant was scheduled, the principal investigator briefly described the study (e.g. time commitment, structure of focus group, and location) and texted them a reminder the day before their focus group. Prior to the start of the focus group, participants read and signed an assent (or informed consent if the participant was 18 years old) as well as a confidentiality agreement to help ensure they would not share information from the group with others. Participants also completed an anonymous demographics sheet. Participants and their parent/guardian provided consent to be audio-recorded. Each participant received a \$20 incentive for participating.

The focus groups lasted an average of 74 minutes, ranging between 54 and 112 minutes, and took place in an empty classroom at the high school. We used a semi-structured interview guide in all of the focus groups to help steer the discussion. The guide was based on an extensive review of the extant literature on adolescent dating behaviors and edited following a pilot focus group with three adolescents from the recruitment high school for flow. Questions were open-ended. Questions did not ask about individual adolescent behavior but rather what the participants believe is true among all adolescents in order to also get at participant beliefs about technology use in romantic relationships and to best answer the research questions of interest. For example, we asked, “how do teens let people know they are interested in them romantically?” However, adolescents were encouraged to drive the discussion so when personal anecdotes or stories were brought up by participants in response to questions or comments by others in the group we did not redirect the conversation. The first author, who is also the principal investigator, conducted all of the focus groups. A research assistant took notes during the groups on the discussion and body language of participants. Focus groups were audio-

recorded and transcribed by the first-author. Two participants did not attend their scheduled focus groups and could not be reached to reschedule. All study materials were reviewed and approved by the Institutional Review Board at the University of North Carolina at Chapel Hill, County School Research Board, and high school administration prior to the start of the study.

Participants/ Study Sample

We had a total of 55 participants (girls=33, boys=22) between 16 and 18 years of age across the 10 (six with girls and four with boys) focus groups. Groups had between four and seven participants with an average of five participants per group. We provide additional demographic information on the participants in Table 3.1.

Table 3.1. Participant demographic information

Demographic Variable	Both Genders N=55 (%)	Girls N=33 (%)	Boys N=22 (%)
Age			
16	15(27)	8(24)	7(32)
17	25(46)	15(46)	10(45)
18	15(27)	10(30)	5(23)
Race/Ethnicity			
Caucasian/White (non-Hispanic)	22(40)	12(36)	10(45)
Black/African American	10(18)	5(15)	5(23)
Hispanic/Latino(a)	8(15)	6(18)	2(9)
Multiple/Biracial	7(13)	5(15)	2(9)
Asian/Pacific Islander	6(11)	3(9)	3(14)
Other	2(4)	2(6)	0(0)

There were also some other group characteristics of note apart from demographics. First, in two of the female groups and one of the male groups participants explained that they considered the other group members to be good/close friends. In all of the other remaining eight groups, the participants said they were familiar with each other from school but did not explicitly say they were friends, though one participant stated that he did not previously know any of the

people in his respective group. However, the nature and content of the discussions did not vary based on the closeness of the participants in their respective groups. Second, the ages of participants within groups were mixed. Two female groups were composed of participants who were all 17 or 18 years of age. In the remaining eight groups the ages ranged from 16 to 18.

Data Analysis

The focus group data were managed using word-processing software and Atlas.ti. We transcribed the audio recordings within 72 hours of each focus group. Analysis was iterative and began after the first focus group. Additionally, immediately following the conclusion of each focus group, we wrote up brief summaries using the observational notes and the transcripts to identify early themes that emerged during the focus group discussions. Some questions and probes were modified in response to these observations for subsequent focus groups. Once all of the groups were complete, we went back through the transcripts to ensure they were all transcribed verbatim.

Following the end of data collection, we developed a codebook. A priori deductive codes were derived from a review of the literature on adolescent dating behaviors and technology use. Additional deductive codes were derived from the focus group discussion guide and inductive codes were derived from the ideas/themes drawn from the summaries of each group (Gibbs, 2008). Some examples of the deductive codes include “enjoy invisibility” and “face to face communication” and inductive codes such as “hiding from emotional risk” and “fear of rejection”. Next, we completed multiple close readings of the transcripts and applied codes to relevant sections of text. If emerging themes could not be categorized within existing codes, new codes were created and applied to all of the transcripts (Hsieh & Shannon, 2005). Throughout the coding process, the first author incorporated memo writing to facilitate the interpretation of the

data (Saldaña, 2009). Codes were also discussed with the research assistant who aided with data collection. Repetitive codes that captured the same concepts were condensed into singular codes. For example, the codes “texting to break-up” and “break-up texts” were combined into the single code “text break-up”. The data were then recoded using the updated codes.

Focus groups were coded in chronological order to aid in determining the progression to thematic saturation and document variability between groups. We compared groups paying attention to similarities and differences that emerged in order to group codes into larger categories. We also paid special attention to the group interaction and not just what was said out loud by participants in order to take full advantage of the focus group environment (Kitzinger, 1995). For example, interactions where there was consensus versus points in the discussion where participants disagreed with or challenged other group members were coded alongside what was said. Descriptions of nonverbal behavior based on the notes taken by the research assistant present at all of the focus groups were also included in the analyses and coded. Sample codes for non-verbal behaviors included “consensus”, “avoiding eye contact”, and “closed body language”. These additional analyses allow insights into the group dynamics and help illustrate the context in which participants shared their thoughts (Crossley, 2002; Kitzinger & Faqhuar, 1999; Myers & McNaughten, 1999). This is also why we present larger segments of transcripts in order to more accurately share the social interactive nature of the groups (Myers & McNaughten, 1999).

Following an in-depth review of the code outputs, summaries, and memos we identified several key themes, which are detailed in the findings below. In order to protect the confidentiality of participants, pseudonyms are used in place of their real names in the quotes used in the findings below.

3.3 Findings

We first describe participant technology use broadly and in the context of their romantic relationships. Next, we detail several technology-related behaviors in romantic relationships (e.g. finding partners, keeping in touch with partners). Finally, we describe the positive (benefits) and negative (consequences) ways in which emotional detachment and the absence of emotional context affect romantic relationships.

Participant technology use

Every participant in the study had a cell phone; 52 of the 55 participants had a smartphone. The three without a smartphone primarily communicated with others through text messages or in-person, and were not as actively engaged on social networking platforms. The rest of the participants were about evenly split between those that described themselves as constantly connected (i.e. using multiple applications and devices to communicate with peers and friends) or technology users with a large amount of down-time where they are disconnected from technology. Despite different amounts of technology use, across groups, participants emphasized that technology-based communication was ubiquitous among their peers and adolescents in general.

Hannah, a 17-year old senior, articulated a reoccurring sentiment across the groups that technology-based communication, while ubiquitous, and was both liked and disliked by participants:

“Yeah it’s kind of like it’s a bad thing that you can always be in contact with them [romantic partners] and are expected to always be around but it’s a good thing that you can always be in contact with them too, it’s complicated.”

While Hannah is referring specifically to communication in romantic relationships, the sentiment was shared for other types of communication. Regardless of individual preference, participants

frequently said there was a social expectation that they engage with their friends and romantic partners through technology.

Staying constantly connected to peers and partners

Participants frequently described that they felt an expectation to be constantly connected through technology to peers and partners. Participants became animated and spoke passionately about the perceived pressure to stay connected and active via text and on social media demonstrated in this quote from Daniel:

“Like...I can’t do anything, I can’t just have my own experience because I need to be attached at the hip with social media cuz like that is the expectation.”

Daniel, 16-year old male sophomore

Despite the expectation that they should stay constantly connected through technology, participants frequently discussed their perception that this resulted in adolescents being “too connected” to one another and their romantic partners. Participants described how the expectation to stay connected contributed to a need to be in constant communication with romantic partners. Joseph and Victor articulated the frustration at the expectations of constant communication that came up repeatedly in several groups:

“Joseph: So it gives the expectation that you have to always text the person. Once you’ve started texting if you get tired of it, it is hard to just be like “alright I don’t want to text you anymore” or something, you get locked into it and then people’s feelings get hurt when you don’t text back. It creates the expectation that you are going to be in constant connection and then if for some reason you are not, even if it’s a serious thing like your phone died or you are at work, people just freak out, “Where are you!” “You’re ignoring me!” it’s like, no I just couldn’t get to my phone.

Victor: Yeah like you’re talking or in class, they keep messaging you like nonstop like, “where are you” “what’s going on”, I’m in school, I’m in class, like come on.”

Joseph, 18-year old male senior

Victor, 17-year old male senior

For these two young men and many others, falling out of constant communication can result in unwanted conflict within their relationships.

Technology and relationship formation

Even though participants explained that technology was commonly used for maintaining communications throughout romantic relationships, participants preferred to meet partners in-person and articulated a stigma attached to meeting someone through technology. Despite that stigma, the participants in the groups estimated that about half of their peers used technology to find romantic partners. For example, most groups participants said that they prefer to find potential partners in-person, even if they only meet briefly or first see them in-person but do not interact with them (e.g. at school or a social event) before using technology to communicate with them as illustrated in the interaction between these three female group members:

“Cate: Yeah I like to meet people first and then follow them [on their social media pages]. Or if they like go to a nearby school, or you see them at a game.

Maggie: like if you see them at a game or something.

Amy: Yeah.

Cate: Just so you’ve seen them in-person, cuz otherwise they could be fake.

Amy: I will follow you if I see you.

Maggie: There is just so many catfishing [fake identities] out there.”

Cate, 16-year old female sophomore

Amy, 17-year old female junior

Maggie, 17-year old female senior

Even if these meetings or sightings were brief, such as the one described by Cate, participants considered this finding a partner in-person. The preference for meeting partners in-person is informed by a concern that people lie about who they are online and it is therefore less risky to connect with partners who you have seen in-person. Participants were afraid of being embarrassed if they ever found out a potential romantic partner they found online lied about their identity. In one of the male groups, similar to the female group above, participants brought up their fear of being “catfished”- where a person lies about their identity through technology- as the reason they wouldn’t seek out a partner online:

“Pete: I’m skeptical to find people online because of that [catfishing].

Kris: Yeah me too.

Isaac: Yeah and I think the show, there is a show about that, called Catfish, it is on MTV and they go out hunting for people that are doing that.

Channing: It's just wrong, like don't do that.

Isaac: It just messes with people's emotions. Like I've had a couple of friends who have actually like, came up to me with pictures asking if like I know this person because they feel like they are being catfished.

Moderator: Oh so like they wanted to check with you to make sure?

Isaac: Yeah, like should I go see this person? Or should I not? Are they real? Because usually they would have like less than 5 pictures of themselves. And I'm like just be careful.

Channing: Red flag!

Mike: Yeah and if it's all just like front face pictures then like nothing with friends or if its in like the same room I mean I don't trust that."

Pete, 18-year old male senior

Kris, 17-year old male junior

Isaac, 18-year old male senior

Channing, 17-year old male junior

Mike, 16-year old male junior

However, in the same discussion these participants said they didn't know anyone who had personally found out a potential romantic partner had lied to them about their identity.

While none of the men in this group had experience with romantic partners lying about who they were through technology, they continued to be very concerned that it could happen, even cautioning their friends away from potential romantic partners for fear of being "catfished".

The preference to find partners in-person appeared to be governed by a fear of being "catfished"-in turn being embarrassed if anyone found out they had been "catfished- but also in part by social pressure from peers. While not specifically stated, when participants said they found partners through technology, others in their groups tended to be critical. These criticisms pointed to an underlying stigma towards using technology to find romantic partners. For example, there were three participants, one male and two female, in different groups who revealed in the discussions that had found partners online. In the male group, one participant brought up his success in finding several previous girlfriends through Twitter while browsing

through tweets with specific hashtags- a word or phrase preceded by a hash or pound sign used to identify messages on specific topics- after a number of the other group members said that it was more common to find partners in-person:

“Joseph: The last three girls I’ve had relationships with all started through me messaging them on Twitter to get their phone number. And that’s how I broke the barrier. I go on Twitter and I’m like ‘Hey, you’re cool, here’s my phone number, text me.’ And either they text you or they don’t...

Pace: It’s awkward.

Joseph: I think it’s easier to be approached that way. It takes the stress out of everything for everyone. It’s immediately private even though you aren’t in the same room.

Pace: If you say it like that it also seems like you are hiding too and that is how a lot of bad stuff happens and they pretend to be someone and they turn out to be...

Joseph: Yeah so I mean like they’re local, they have pictures with other people, and they say yeah, I got to high school here I don’t think it would be easy to get tricked.

Alex: I dunno, I would talk to them in-person first.

Sam: I would too.

Joseph: But then that limits the people you met to only the people you see in your every day life.

Alex: Yeah.

Pace: I dunno, I mean I’m not sitting around my room all day.

Joseph: I’m not either, I’m just saying...”

Joseph, 18-year old male senior

Pace, 17-year old male senior

Alex, 16-year old sophomore

Sam, 16-year old male sophomore

At first, the other male group members said that they wouldn’t find partners using technology for fear that they would lie about who they really were. However, later in the conversation Pace suggests, with a negative connotation, that finding partners through technology is for people who are sitting around their room all day. In-person, the tone of the conversation at this point was tense and none of the other group members would look at Joseph while he was talking. Though the majority of the groups framed finding partners in-person as a preference, this interaction illustrates the underlying social pressure to find partners in-person at work. Joseph was an exception to the preference of finding partners in-person and did not seem to care about the group’s critique of his use of technology to find partners. The impact of social pressure to find

partners in-person was also displayed in the female groups. In the two female groups where participants said they had found partners online, the other participants in their respective groups quickly changed the subject rather than directly criticize them. However, the rapidity with which the subject changed and the body language of the participants suggested the other group members were being passively critical. This passive critique illustrated that there is still a certain amount of stigma attached to finding partners using technology.

Communicating with partners via technology: Benefits and consequences

Beyond finding romantic partners, participants were quick to say that technology-based communications were integral to maintaining and ending romantic relationships. One recurring explanation for why participants often used technology to communicate with romantic partners was that technology provides the perception of emotional distance or detachment that does not exist with in-person interactions. This emotional detachment was considered both beneficial and harmful.

Benefits to “hiding behind a screen”

“Hiding behind a screen”- a phrase used by multiple participants in different groups to describe the emotional distance created by technology-based communication- was discussed with great intensity and interest in several groups. In several groups, the emotional distance and detachment facilitated by technology-based communication was viewed positively. For example, several participants said that technology helped to reduce the social anxiety they felt when communicating in-person. Participants often said that technology-based communication felt less risky and therefore chose to use it more frequently to share their feelings. For example, Quinn, Karen, and Emma summed up the rationale for sharing feelings with romantic partners through

technology versus in-person during a discussion of how technology can improve their communication with romantic partners:

“Quinn: There are even, like personal things that I’m not comfortable talking about in-person but over a text it’s like, you don’t have to see the embarrassment on my face or whatever it is... whatever emotion.

Karen: You just get more confident because you’re behind a screen.

Quinn: Yeah exactly!

Karen: Like it’s all words not actions.

Quinn: And you’re not saying it out loud so you can type whatever. They can hide behind the screen, we can do whatever we want basically.

Emma: Yeah I think you are very aware of yourself sometimes like the way you look and the things you are insecure about or whatever but when you’re behind the screen you can be sitting there in my pajamas like nothing and you don’t even care about the way I look so I feel less self conscious.”

Quinn, 17-year old female junior

Karen, 17-year old female junior

Emma, 17-year old female junior

While decreased social anxiety and self-consciousness were cited as being positive outcomes of emotional distance, participants were more focused on drawbacks to the detachment afforded by technology-based communications.

Absence of emotional context, “Don’t know how your words impact”

The negative consequences of emotional detachment came up frequently in all of the groups. Participants shared stories and anecdotes about how the absence of emotional context, such as facial expressions and tone, often led to the misinterpretation of technology-based messages or social media posts. Without emotional context, participants explained that they often are unaware about the impact their words are having which can lead them to behave in ways they would not in-person as highlighted in the following interaction between four male participants:

“Alex: Yeah with technology it is way easier to yell at someone.

Joseph: Yeah it’s easier.

Sam: I’d say it is way easier. I mean you aren’t seeing how the person is reacting, you don’t have to deal with it.

Victor: But the deal with technology, you don’t even know how exactly your words have impacted the other person.

Joseph: Yeah!

Sam: Yeah you don't know to stop.

Victor: Yeah you can pile on.

Alex: Yeah you just say stuff without knowing how they feel. You can't tell if it is actually hurting them or not. You can just list stuff they did and they may just be sitting there like "yeah whatever" or they may be crying their eyes out."

Alex, 16-year old sophomore

Joseph, 18-year old male senior

Victor, 17-year old male senior

Sam, 16-year old male sophomore

Emotional detachment provided by technology-based communication prevents these men from knowing the emotional toll of their messages. The interaction below provides another example of how emotional detachment can enable painful communication that would not happen in-person:

"Rebecca: Ok Sara is going to know this story, ok so this kid named "James", I was very livid, we always fought, and he for Valentine's day... he wrote me a letter and it was not ok. SO I was really really angry and we fought for like two weeks but never in-person. I'd text him like really mean things, I'm a really mean person.

Sara: No you are not.

Tiana: You are super sweet but yeah you can be mean.

Rebecca: So I'd text him things like you are a terrible boyfriend, like I don't even want to date you anymore, blah blah , like really mean hurtful things that I would never say in-person. And then in-person we would act like everything was ok and like hold hands and stuff and be ok in public.

Moderator: While it was all happening?

Sara: Laughing

Rebecca: Like in-between classes like hold hands and then kiss goodbye and then I'd like text him like during class, "I hate you"

Group: Laughing

Sara: Way to keep him on his toes.

Rebecca: Yeah we were like fighting in this one universe and were fine in the other. Like he knew I was mad but I didn't want to let it ruin everything. Even when we were alone during that time I couldn't yell at him in-person I'd just be really quiet and I would say all the mean things over text."

Rebecca, 17-year old female senior

Sara, 18-year old female senior

Tiana, 17-year old female junior

Rebecca described "not wanting to ruin everything", referring to how if she argued with her partner in-person it would ruin their relationship. However, she felt free to say things she would not express in-person via technology in large part because she did not have to witness their

impact. Rebecca wasn't alone as multiple participants across groups articulated similar ideas about how they frequently would say mean and hurtful things through technology that they never would say in-person.

However, emotional detachment afforded by technology was described as one-sided. Participants explained that being on the receiving end of hurtful messages was just as hurtful as hearing them in-person as described by Quinn :

“Quinn: Like when I broke up with my boyfriend, he like went off on me over text, like he was like saying all these really bad things and like if we were in-person he would have left it at that and not had said anything. Cuz in-person he doesn't want to see how upset I got, he doesn't want to deal with me crying my eyes out, but over text he doesn't have to deal with it but I still have to deal with it and re-read it on my phone over and over.”
Quinn, 17-year old female junior

While some participants said that they felt they could ignore hurtful messages sent through technology more so than when they are said in-person, the majority of participants, like Quinn, said that the impact of technology-based communication affected them emotionally just as much as in-person interactions. Some participants suggested that mean things said through technology may even be worse than mean things said in-person as suggested by Hannah:

“Hannah: Yeah, I feel like in-person even if you say something mean you see their face and are like, I'm sorry, I didn't mean to say that right then and they will say oh ok I understand. But when you do it over text it's like they say, you could've stopped responding, you could've taken the time to fix it, like in-person you can't unspeak words but in text you can backspace...”
Hannah, 17-year old female senior

Absence of emotional context and cyberstalking

In addition to saying things they would not say in-person, participants described doing things via technology that they would not do in-person. For example, in both male and female groups, many participants discussed how “digital stalking”- monitoring a partner or potential partner's social media accounts and whereabouts using GPS information attached to posts on

social media sites- was considered normal over the course of a romantic relationship and even after the relationship ended, but in-person stalking was considered inappropriate as illustrated in this interaction between several male group members:

“Isaac: ok there is a different kind of stalking like yeah I’m following you around and I’m watching you like sending you creepy texts and then there is like Facebook stalking.

Don: Yeah.

Isaac: And that’s like an OK stalking because it’s not like bothering anybody, it’s just looking at pictures and reminiscing and then there is the stalking where it’s like you show up at someone’s house and it’s like three months later and it’s just like ugh this is weird.

Kris: Well you gotta watch out though, cuz like you’re scrolling down the Instagram pictures and there is a picture from like two years ago and you accidently double tap and now she knows you are watching her

Channing: Oooooh!!!

Don: Oh no!!!”

Isaac, 18-year old male senior

Don, 18-year old male senior

Kris, 17-year old male junior

Channing, 17-year old male junior

In several groups participants would begin by saying that they perceived digital stalking to be a normal part of romantic relationships but as the conversations progressed, participants often became increasingly critical of these types of behaviors due to the potential fallout if they were caught.

3.4 Discussion

Our findings highlight that adolescents extensively use technology to communicate with romantic partners. Participants expressed that there is a social expectation among peers to use technology to communicate with romantic partners. Further, we have shown that adolescents believe that technology engenders emotional detachment, which has both positive and negative influences on romantic relationships. Below, we discuss the implications of our findings as well as detail how they can inform future research and romantic relationship interventions.

Several perceived benefits and consequences with respect to using technology in their romantic relationships emerged throughout the focus group discussions. These conversations generally revolved around the fact that technology often makes them feel emotionally detached from communications as noted in the findings. For some, technology provided an additive effect wherein they had increased access to their romantic partners, which improved communication and reduced their feelings of social anxiety. For example, participants frequently expressed their aptitude for self-disclosure increasing due to technology. These findings map on to previous research suggesting that technology can help reduce feelings of social anxiety and increase self-disclosure (Davis, 2012, 2013; Valkenburg & Peter, 2009, 2011).

However, participant descriptions also suggest that some may use technology to replace rather than augment their communication with partners. By not interacting in-person, there is a concern among experts that adolescents are not getting the in-person interactions necessary to develop skills to effectively interact with others (Turkle, 2012). Just as digital platforms may provide avenues for the development of intimacy and self-disclosure, they also present opportunities to avoid emotional risks, which may be detrimental to adolescent development (Gardner & Davis, 2013). Researchers argue that romantic experiences offer important developmental opportunities among adolescents for maturation of intimacy, sexuality, identity, and autonomy (Collins et al., 2009). By avoiding emotional risks or making themselves vulnerable, adolescents face the risk of being unable to develop healthy intimate relationships long-term.

Across groups, participants explained that they felt it was easier to be aggressive and verbally abusive through technology-based communications. Technology also encouraged cyberstalking. In both cases, participants were explicit that they wouldn't behave that way in-

person. The explanation for these behaviors is likely two-fold. First, researchers theorize that technology decreases inhibition (Mehari et al., 2014; Suler, 2004). Our findings lend support to this theory as several participants explained that they often feel more detached from technology-based communications compared to in-person interactions. Second, technology-based communication reduces nonverbal cues as highlighted by the participants. Researchers suggest that the lack of nonverbal cues is directly associated with increased likelihood of misunderstandings and miscommunications (Kiesler et al., 1984). Social cues play a key role in processing the nature and intention of communications (Crick & Dodge, 1994). Our findings lend additional support that social cues in adolescent romantic relationships are also important to preventing misunderstandings as well as potentially curbing aggressive communications and potentially verbal abuse. Research suggests that there can be severe negative health consequences as a result of verbal abuse victimization thus preventing these behaviors is key to improving adolescent health outcomes (DiClemente et al., 2005; Exner-Cortens et al., 2012).

While this study has many strengths, findings should be considered in light of certain limitations. First, the sample was drawn from a convenience sample from a single public high school. Participants were also all willing to participate in a focus group following the end of the school day. Further, while I did not explicitly inform potential participants about the nature of my study, I told them that the focus groups would be about technology use. It might be that individuals with a particular interest in technology were more likely to attend the focus groups. This sample may systematically differ from the general population of adolescents. However, based on information gathered during the groups there appeared to be a diverse amount of technology used. Additionally, while I took measures to reassure participants that everything they said in the groups would remain confidential it is possible that their responses suffer from

social desirability bias. Lastly, I did not ask participants specifically about their sexual orientation. However, while several participants self-identified as gay during the course of our discussions, since I did not specifically ask it was difficult to determine if their perceptions qualitatively differed from other participants. Future studies should examine the perceptions of LGBTQ adolescents with regards to their experiences with technology-based communications in romantic relationships.

Implications for future research

While this was an exploratory study in a new area of research, our findings help set the agenda for future research. First, future research on adolescent romantic relationships should examine the relationship between emotional detachment and technology-based communications in-depth. Specifically, researchers can explore whether increased emotional detachment is associated with maladaptive use of technology including dating abuse. Alternatively, research is needed to determine if there is a difference between adolescents who use technology in addition to in-person interactions compared to adolescents who replace in-person interactions with technology-based communications. This research can help us better understand how emotional detachment unfolds between these two different types of adolescent technology-based communication users and its corresponding impact on dating behaviors. For example, are adolescents who replace in-person interactions with technology-based communications at increased risk of perpetrating unhealthy relationship behaviors?

Additional research is also needed to better understand what factors contribute to negative emotional detachment among adolescents. For example, some researchers suggest that technology promotes emotional detachment in part because partners look into a screen instead of at their face (Turkle, 2012). This coupled with geographic distance makes technology-based

communication seem less risky (Mehari et al., 2014; Suler, 2004). Better understanding of how technology-based communication fosters emotional detachment can help inform interventions to reduce harmful detachment while still affording adolescents the benefits afforded by technology.

Second, it is important that future interventions acknowledge the concern of social isolation among adolescents if they disengage from technology-based communication. In the groups, when participants voiced their frustration at the pressure to stay constantly connected they said that they hadn't realized how this frustration was shared by such a large number of their peers. Interventions that open channels of communication between peers about technology may be helpful in reducing the social pressure to stay constantly connected.

Finally, our findings have implications for CDA research. Specifically, participants frequently described behaviors that experts label as CDA perpetration as being a "normal" part of a romantic relationship. For example, several participants described sending a verbally abusive message to a romantic partner while pretending everything was normal in-person. These findings somewhat contradict emerging evidence that suggests in-person and cyber abuse are often reciprocal and co-occur (Zweig et al., 2013; Temple et al., 2016). Our findings suggest that there may be a sub-population of adolescents that only perpetrate abuse through technology. However, participants may have been reticent to discuss in-person dating abuse perpetration since it is generally considered to be socially unacceptable whereas less is known about the acceptability of abuse that occurs through technology.

3.5 Conclusion

It is important to examine how technology may be fundamentally changing the nature of adolescent romantic relationships due to the impact these early relationships have on the health and development of adolescents. We found evidence to suggest that adolescents both frequently

use technology over the course of their romantic relationships as well as perceive that technology both helps and harms these relationships. Further, adolescents may feel a need to use technology in order to stay connected with their romantic partners. Ensuring healthy adolescent development requires further examination of technology-based communications within adolescent romantic relationships and interventions that support healthy use of technology.

CHAPTER 4: SHARED OR UNIQUE: EXAMINING THE RISK AND PROTECTIVE FACTORS ASSOCIATED WITH IN-PERSON AND CYBER DATING ABUSE PERPETRATION AMONG ADOLESCENTS (MANUSCRIPT #2)

4.1 Introduction

The growth of technology use among adolescents during the previous decade has been tremendous. In 2004, 45% of adolescents reported having a cellphone and 59% reported having access to a personal computer at home; by 2014, 88% reported having a cellphone (of which 73% were smartphones) and 87% reported having access to a personal computer at home (Lenhart et al., 2015). More than half (56%) of adolescents report going online several times a day and exchange an average of 30 daily text messages (Lenhart et al., 2015). Whereas romantic relationships previously occurred primarily through in-person or telephone (voice) communication, recent research suggests that these newer technologies provide significant space where adolescents form, maintain, and end relationships (Reed et al., 2015; Reed et al., 2016). With increased use of technology has come the recognition that these technologies are sometimes used in ways that are harmful to adolescent peer relationships and development (David-Ferdon & Hertz, 2007; Ybarra & Mitchell, 2004). The primary focus of previous research on harmful uses of technology has been on cyberbullying- the use of technology to tease, harass, and threaten peers (David-Ferdon & Hertz, 2007). However, recent evidence suggests that adolescents also use technologies (e.g. computers, cellphones, and other online social networking mechanisms) to psychologically and sexually abuse people with whom they are romantically involved (Zweig et al., 2013a). Despite this recent work, there is a lack of a common definition

for this mode of abuse. Researchers have referred to it as cyber dating abuse (Borrajo et al., 2015a; Dick et al., 2014; Zweig et al., 2013a) cyber-aggression (Schnurr et al., 2013), electronic dating violence/aggression (Cutbush et al., 2012; Hinduja & Patchin, 2013), and technology-assisted dating abuse (Stonard et al., 2014). In the current study, we use the term cyber dating abuse (CDA) to refer to both psychological and sexual abuse delivered through technology-based communications because it is the term most frequently used term in the literature (Borrajo et al., 2015b).

A wide range of behaviors including monitoring a romantic partner's whereabouts and activities via technology (Burke et al., 2011; Lyndon et al., 2011), controlling a partner through excessive contact or harassment (Stonard et al., 2014), sending mean, rude or hurtful messages (Hinduja & Patchin, 2013), sending threatening or sexually coercive messages (Zweig et al., 2013a), and spreading rumors or sharing private pictures or videos with social networks (Hinduja & Patchin, 2013; Lyndon et al., 2011) are considered indicators of CDA. In a recent study, 26% of adolescents in dating relationships reported that they experienced CDA in the previous year (Zweig et al., 2013a). In the same study, researchers found that being a victim of CDA was associated with negative health outcomes including depression and risky sexual behavior (Zweig et al., 2013b).

Despite its prevalence and potential for negative consequences, little research has been conducted on CDA perpetration. In fact, no study to date has examined risk and protective factors for this mode of dating abuse perpetration, information that is critical for informing prevention interventions. Previous research on the etiology of dating abuse perpetration has focused almost exclusively on psychological, physical, and sexual abuse that occurs in-person

(IPDA). The extent to which findings from research on IPDA perpetration can be generalized to CDA is not known.

The aim of the current study was to examine whether risk and protective factors for IPDA and CDA are shared or distinct to inform the development of interventions to prevent IPDA and/or CDA. Before describing our current study methods and results, we 1) describe the theoretical and empirical evidence that guided the selection of risk and protective factors we examined in our study, and 2) review how researchers conceptualize the relationship between abusive cyber and in-person behaviors.

Risk and protective factors for dating abuse perpetration examined

Previous research has not measured dating abuse perpetration in such a way that allowed for comparison between modes of abuse. Therefore, it is unclear what risk and protective factors may be specifically associated with CDA. Using factors conceptualized from pre-existing theories used in IPDA research will help us understand if these same theories can be extended to CDA perpetration and in turn used to guide intervention development. In our current study, we use factors along four specific domains that have theoretically and empirically been shown to be important risk or protective factors for IPDA including: cognitions; competencies; family characteristics; and mental health. . Below we discuss these four domains and the evidence that they contribute to dating abuse perpetration that is conceptualized as occurring in-person (Vagi et al., 2013).

We conceptualized factors from the cognitions and competencies domains from a social learning theory perspective. Social learning theory suggests that dating abuse is learned from other individuals through observing aggression and witnessing positive consequences from that aggression (Bandura, 1977). In turn, adolescents develop accepting attitudes towards and

outcome expectations for using the same violent behaviors (Bandura, 1977). In longitudinal studies, having the attitude that dating abuse is acceptable predicted later use of IPDA (Brendgen, Vitaro, Tremblay, & Wanner, 2002; Foshee, Linder, MacDougall, & Bangdiwala, 2001; Wolfe et al., 2004). Empirical evidence also suggests that that expectations of positive outcomes from being abusive increases risk for perpetrating abuse, whereas expectations of negative outcomes from being abusive is protective against perpetration (Breslin, Riggs, O'leary, & Arias, 1990; Riggs & Caulfield, 1997). Further, evidence suggests that adolescents who view violence as an appropriate way to resolve conflict rather than using constructive conflict management skills are be more likely to perpetrate IPDA in their romantic relationships (Connolly, Pepler, Craig, & Taradash, 2000; O'Keefe, 1998). However, findings are inconclusive in that researchers found that though conflict management skills were associated with IPDA they did not predict IPDA (Foshee et al., 2001; Wolfe et al., 2004).

We conceptualized factors in the family characteristics domain from a social control perspective. Social control theory posits that everyone has a tendency for deviance but conventional controls can constrain deviant behavior and in turn prevent risky behavior such as dating abuse (Hirschi, 1969). Empirical evidence lends support to this theory in the context of dating abuse. Family characteristics that have been found to be protective against use of IPDA include: positive parental responsiveness (Latzman, Vivolo-Kantor, Niolon, & Ghazarian, 2015; Wekerle & Wolfe, 1998), parental monitoring (Chase, Treboux, & O'leary, 2002; Howard, Qiu, & Boekeloo, 2003; Leadbeater, Banister, Ellis, & Yeung, 2008), good parent-adolescent communication (Tyler, Brownridge, & Melander, 2011), and parent-adolescent closeness and cohesion (Ehrensaft et al., 2003b; Foshee, Chang, McNaughton Reyes, Chen, & Ennett, 2015b; Tyler et al., 2011). In contrast, family characteristics that put adolescents at risk for perpetrating

IPDA include family conflict (Foshee et al., 2015b; Giordano, Johnson, Manning, & Longmore, 2016; Magdol, Moffitt, Caspi, & Silva, 1998; Tschann et al., 2009) and parent-adolescent discord (Linder & Collins, 2005).

We conceptualized mental health attributes from an emotional regulation perspective, which suggests adolescents unable to regulate emotions may have inappropriate emotional responses when faced with conflict in romantic relationships (Kim, Pears, Capaldi, & Owen, 2009). Previous empirical literature links certain mental health attributes to IPDA, including depression (Foshee, McNaughton Reyes, & Ennett, 2010; McCloskey & Lichter, 2003), anger (Wolf & Foshee, 2003; Wolfe et al., 2004), and anger dysregulation (McNaughton Reyes et al., 2015).

IPDA and CDA perpetration: Similar or distinct etiologies?

While there is theoretical and empirical evidence that the above risk and protective factors are associated with IPDA, whether they increase risk for or provide protection against CDA perpetration has not been examined and there is a debate in the field as to whether or not CDA and IPDA are likely to share a similar etiology.

Evidence to suggest that CDA and IPDA perpetration may share risk and protective factors includes the strong correlation that has been found between the two modes of dating abuse perpetration. For example, Zweig et al. (2013) found that 58% of adolescents who reported perpetrating physical IPDA also perpetrated non-sexual CDA. In the same study 76% of adolescents who reported perpetrating psychological IPDA also reported perpetrating non-sexual CDA. Several researchers have argued that CDA perpetration is a new mode for psychological or sexual abuse and point to the co-occurrence of in-person psychological and cyber psychological abuse as evidence to support this assertion (Borrajo et al., 2015a). For these reasons, some

researchers have suggested that CDA operates along the same developmental pathways as IPDA perpetration and is simply executed through technology suggesting that the two modes of abuse likely share similar risk and protective factors (Barter et al., 2015; Stonard et al., 2014).

Others suggest that though they may share features in common IPDA and CDA perpetration may be a qualitatively different types of abuse phenomena rather than simply two different modes of delivering abuse (Stonard et al., 2014). Proponents of this view point out that although IPDA and CDA perpetration are correlated, they are not perfectly correlated. For example, Zweig et al. (2013) examined the co-occurrence of CDA perpetration and IPDA finding that 25% of adolescents who reported perpetrating psychological CDA only perpetrated this mode of abuse. Similarly, Cutbush et al. (2012) found that a substantial group of adolescents only perpetrated CDA. Therefore, some adolescents perpetrate only IPDA or CDA (Cutbush et al., 2012; Hinduja & Patchin, 2013; Zweig et al., 2013a). Further, in both the Zweig et al. (2013) and Cutbush et al. (2012) studies, the measures used to capture psychological IPDA did not distinguish between abuse that occurred in-person and that which may have occurred through technology. Therefore, while psychological CDA and IPDA abuse co-occurred in both studies, that correlation may be due to the measures capturing the same behavior. Temple et al. (2016) argues that CDA perpetration should be conceptualized as a distinct type of dating abuse that may serve as a vehicle for psychological abuse but that also creates unique ways for abusing a partner that cannot occur in-person. Specifically, certain dimensions of CDA perpetration such as the ability to public humiliate and embarrass one's partner may have different underlying motivations than IPDA perpetration. Technology-based communication differs from in-person or telephone call communication since it can easily migrate from what is arguably private interactions into public spaces along with giving romantic partners constant access to one

another without geographic or temporal constraints (Draucker & Martsof, 2010; Reed et al., 2016).

Although no empirical studies have examined whether IPDA and CDA perpetration share risk and protective factors, several studies have examined whether in-person *bullying* and *cyberbullying* perpetration share risk and protective factors. Some of these studies provide evidence for shared risk and protective factors (Kowalski & Limber, 2007; Williams & Guerra, 2007; Ybarra et al., 2007), others provide evidence of unique risk and protective factors for each mode of bullying. When risk factors are shared, researchers have found that attitudes accepting of bullying (Williams and Guerra; 2007), family conflict (Low & Espelage, 2013), and feelings of anger and anger dysregulation (Kowalski & Limber, 2013; Tanrikulu & Campbell, 2015) predicted both in-person and cyberbullying, and that parent-adolescent closeness and cohesion (Ybarra et al. 2007; Wang et al. 2009) were protective against both modes of bullying. However, Hemphill et al. (2012) found that family conflict predicted in-person bullying, but did not predict cyberbullying. Low and Espelage (2013) found that parental monitoring predicted increased cyberbullying perpetration (among females), but decreased in-person bullying perpetration (among males). Due to their mixed findings, Hemphill et al. (2012) and Low and Espelage (2013) suggest that family characteristics may be less influential factors for both modes of bullying compared to cognitions and competencies with respect to bullying. If the findings from these studies on bullying are transferrable to dating abuse, it suggests that CDA and IPDA may share certain risk and protective factors, particularly those related to cognitions and mental health attributes. However, they also suggest there may be differences between IPDA and CDA particularly with respect to family risk and protective factors as suggested in the studies by Hemphill et al. (2012) and Low and Espelage (2013).

Current Study

In the current study, we examined whether IPDA and CDA perpetration share theoretically and empirically supported risk and protective factors in a sample of adolescents who had been exposed to domestic violence against their mothers. Although dating abuse prevention efforts are needed for all adolescents, this group is of particularly high need due to their increased risk for dating abuse perpetration (Carr & VanDeusen, 2002; Ehrensaft et al., 2003a; Narayan et al., 2014; Reitzel-Jaffe & Wolfe, 2001; Rosenbaum & O'Leary, 1981). Only two previous studies have examined risk and protective factors for IPDA perpetration in this high-risk population (O'Keefe, 1998; Foshee et al., 2016) and no previous studies with this population have examined risk and protective factors for CDA perpetration. A clear understanding of risk and protective factors is needed to develop programs for preventing IPDA and CDA perpetration in this group.

As previously stated, we examined four domains of factors: cognitions, competencies, family characteristics, and mental health attributes. The cognitions that we examined were attitudes towards dating abuse and perceived negative consequences of dating abuse, with the former conceptualized as a risk and the latter conceptualized as protective. The competency examined was conflict management skills, conceptualized as a protective factor. The family risk factors examined were family conflict and mother-adolescent discord and the family protective factors examined were maternal responsiveness, maternal monitoring, quality of mother-adolescent communication, mother-adolescent closeness and family cohesion. The mental health risk factors examined were depressed affect, feelings of anger, and anger dysregulation. Because the two modes of dating abuse have been found to co-vary (Cutbush et al., 2012; Zweig et al., 2013a), we used generalized estimation equation (GEE) approach that accounted for that co-

variation (Haines, Kleinman, Rifas-Shiman, Field, & Austin, 2010). Using this strategy allowed for distinguishing whether a risk or protective factor was shared between both abuse modes, was unique to one abuse mode, or was not associated with either abuse mode with the ultimate goal of informing intervention development and subsequent research on dating abuse perpetration.

4.2 Methods

Study Design

Data are from the baseline assessment of a randomized controlled trial (RCT) of a dating abuse prevention program for adolescents exposed to domestic violence called Moms and Teens for Safe Dates (Foshee et al., 2015a). Baseline data for the RCT were collected between 2010 and 2012. Mothers who had been victims of domestic violence and their 12-16 year old adolescents who had been exposed to the abuse were recruited to participate in the RCT. Mothers were eligible for the study if they: 1) had been a victim of domestic violence at some point during their lives; 2) lived apart from any abusive partner; 3) had an adolescent between 12 and 16 years of age that lived with them at least part of the time; 4) had experienced domestic violence after their adolescent was born; and 5) spoke and read English. Eligible adolescents were those who were between the ages of 12 and 16 at the time of enrollment and had mothers with the above characteristics. Recruited mothers and adolescents completed a baseline telephone interview that lasted approximately 25 minutes.

Participant Recruitment

Mothers were recruited for the trial via several community-based recruitment strategies (described in detail in Foshee et al., 2015). The primary recruitment strategy was through domestic violence coalitions that were part of the Centers for Disease Control and Prevention (CDC) Domestic Violence Prevention Enhancement and Leadership Alliances (DELTA)

program. While we worked with many of the 14-state DELTA coalitions, we worked most closely with the North Carolina DELTA coalition [North Carolina Coalition against Domestic Violence (NCCADV)] in part because the study investigators were based in North Carolina. The staff at NCCADV delivered brief presentations about the study to professionals who work with domestic violence victims and passed out flyers to distribute to potential participants at their respective agencies. Staff from other DELTA coalitions also distributed study flyers to potential participants. In addition to these efforts, study information and flyers were sent to social service departments and domestic violence and sexual assault agencies in North Carolina and several other states. In Atlanta, GA and Philadelphia, PA, recruitment posters were advertised on mass transit systems. Recruitment materials included a toll free number for potential participants to call if they were interested in the study. Interested mothers who called the toll free number were screened by trained University of North Carolina research staff members to determine their eligibility. Mothers provided consent for both their and their adolescent's participation in the study. Adolescents provided verbal assent for their participation prior to the start of the baseline interview. All study procedures were approved by the University of North Carolina Institutional Review Board prior to the start of the study.

Study Sample

A total of 409 mothers and adolescents from 17 states completed the baseline interviews. The majority of participants were from North Carolina (51%; n=209), followed by Georgia (24%; n=100) and Pennsylvania (12%; n=50). The average age of the adolescents was 13.6 years. Approximately 36% of the adolescents were male, 54.8% were black, 26.9% were white, and the remaining 18.3% were of another race. The average age of the mothers was 38.1 years. In terms of education, approximately 20% of the mothers did not complete high school, 59.7%

were currently unemployed, 64.1% were not in a romantic relationship, and 84% received some form of public assistance. On average, adolescents had been exposed to domestic violence for five years and four months, with a range from one month and 16 years. Approximately 66% of the adolescents were exposed to domestic violence perpetrated by their biological father and 52.6% had been exposed to violence against their mother by more than one perpetrator. In terms of Domestic Violence Protection Orders (DVPO), over half (58.2%) had filed for a DVPO against the partner that the adolescent was exposed to most with 51% of the women receiving a DVPO. A small number of participants (n=10) were missing data on the outcomes or covariates and were dropped from analyses. The final analytic sample was composed of 399 mother-adolescent dyads.

Measures

Dating abuse perpetration measures

Adolescents were asked if they had ever been on a date which was defined as informal activities like going out in a group and then pairing up with someone in whom they were interested, or meeting someone they were interested in at the mall, a park or at a sporting event, or more formal activities like going out to eat or to a movie together. If the adolescent responded that they had not been on a date they were given a score of 0 on the two dating abuse measures. If they responded “yes”, they then completed the dating abuse questions.

IPDA perpetration. The perpetration of IPDA was assessed with five items from the Safe Dates Physical Dating Abuse Scale (Centers for Disease Control and Prevention, 2006; Foshee, 1996) and two items to capture in-person sexual dating abuse. Participants were asked how many times they had ever (1) slapped or scratched a date, (2) physically twisted a date’s arm or bent back his/her fingers, (3) grabbed, shoved, or kicked a date, (4) hit a date with a fist or something hard,

(5) assaulted a date with a knife or a gun, (6) put his/her hand on a date's private parts when the date did not want that, and/or (7) forced a date to have sex or to do something else sexual that the person did not want to do. Adolescents were instructed not to count acts perpetrated in self-defense. Response options ranged from 0 for "never" to three for "more than four times." Responses were summed and then dichotomized such that 0=no IPDA perpetration and 1=at least one act of IPDA perpetration.

CDA perpetration. The perpetration of CDA was measured using a modified version of the Technology Abuse in Teen Relationships Scale (Picard, 2007). Participants were asked how many times they had ever done the following things to a person they were dating using a cellphone, email, instant message, text message, web chat, a blog, or a networking site like MySpace or Facebook: (1) spread rumors about someone they were dating, (2) called the person they were dating bad names, put them down, or said really mean things to them, (3) showed private or embarrassing pictures/videos of the person to others, and/or (4) repeatedly checked up on the person to see where he or she was. Response options ranged from 0 for "never" to 3 for "more than four times." Responses were summed and then dichotomized such that 0=no CDA perpetration and 1=at least one act of CDA perpetration.

Risk and protective factors

The measures for the risk and protective factors are described in Table 4.1. All measures are based on participant self-reports.

Table 4.1. Measurement of risk and protective factors

Variable	Risk (RF)/ Protective(PF)	# of items (alpha or correlation)	Response categories	Item or example item
<i>Cognitions</i>				
Acceptance of dating violence (Foshee et al., 2005)	RF	18 (.87)	1 = strongly disagree to 4 = strongly agree	“It is OK for a girl to hit her boyfriend if he insulted her in front of friends.” “A girl who makes her boyfriend jealous on purpose deserves to be hit.”
Perceived negative consequences	PF	4 (.79)	1 = very unlikely to 4 = very likely	“How likely or unlikely would the following be if you hit someone you were dating:” “they would break up with you?” “that you would be arrested?” “that your friends would be very angry with you?” “bad things would happen to you?”
<i>Competency</i>				
Conflict management skills (Foshee et al., 2005)	PF	10 (.78)	1=never to 4=very often	“During the last 3 months, when you were angry or having a disagreement with someone, how often would you say that you:” “explained to the person why you were angry?” “Asked the person questions to better understand the situation?” “Suggested possible solutions to the problem?”
<i>Family</i>				
Family conflict (Simpson and McBride, 1992)	RF	4 (.87)	1=never to 4=very often	“How often in the past 3 months did members of your family say bad things to each other?” “Family members got really mad at one another?”
Maternal-adolescent discord	RF	4 (.66)	1 = never to 4 = very often	Frequency of disagreements with mother; Frequency of anger toward the mother; “How often in the past 3 months was your mother critical of what you said?” “Did your mother put down your choices and preferences?”
Maternal responsiveness (Simpson and McBride, 1992)	PF	7 (.85)	1=never to 4=very often	“How often does your mother try to understand what you need to be happy?” “Try to cheer you up when you are sad?” “Make you feel loved?”

Maternal monitoring	PF	7 (.73)	1 = not like her to 4 = just like her	“How like or unlike your mother is it to find out where you are going when you go out?” “Try to meet your friends?” “Monitor your music, video games, and computer games?”
Quality of mother-adolescent communication	PF	2 ($r = .63$; $p < .001$)	1 = very hard to 4 = very easy 1 = very dissatisfied to 4 = very satisfied	“In general, how hard or easy is it for you to talk to your mother about things that are personal to you?” “In general, how dissatisfied or satisfied are you with the way you and your mother talk about things that are personal to you?”
Mother-adolescent closeness (Office of Applied Studies, 2000)	PF	1	1 = not close at all to 5 = extremely close	“How close do you feel to your mother?”
Family cohesion (Simpson and McBride, 1992)	PF	3 (.74)	1 = never to 4 = very often	“In the past 3 months, how often was there a feeling of togetherness in your family?”
<i>Mental Health Attributes</i>				
Depressed affect (Radloff, 1977)	RF	4 (.76)	1 = never to 4 = very often	“How often in the past 4 weeks did you feel lonely?” “Depressed?” “Happy [reverse coded]?” “Sad?”
Feelings of anger	RF	1	1 = never to 4 = very often	“How often in the past 3 months have you felt angry at someone?”
Anger dysregulation	RF	2 ($r = .54$; $p < .0001$)	1 = never to 4 = very often	“During the past 3 months when you were angry at someone how often did you yell at the person?” “Make nasty comments about the person to others?”

Descriptive statistics on each risk and protective factors are presented in Table 4.2. Items measuring each factor were summed and averaged such that as the score increased so did the risk or protection of that respective factor.

Table 4.2 Means, standard deviations, and ranges of examined risk and protective factors (n = 399)

Risk Factor	Mean (SD)	Potential Range	Actual Range
<i>Cognitions</i>			
Acceptance of dating abuse	1.54 (0.45)	1 – 4	1 – 3.39
Perceived negative consequences	2.83 (0.90)	1 – 4	1 – 4
<i>Competency</i>			
Conflict management skills	3.13 (0.54)	1 – 4	1 – 4
<i>Family</i>			
Family conflict	2.70 (0.79)	1 – 4	1 – 4
Mother-adolescent discord	2.70 (0.66)	1 – 4	1 – 4
Maternal responsiveness	3.59 (0.47)	1 – 4	1 – 4
Maternal monitoring	2.83 (0.64)	1 – 4	1 – 4
Mother-adolescent communication	2.93 (0.83)	1 – 4	1 – 4
Mother-adolescent closeness	4.05 (0.96)	1 – 5	1 – 5
Family cohesion	3.11 (0.75)	1 – 4	1 – 4
<i>Mental Health Attributes</i>			
Depressed affect	2.14 (0.71)	1 – 4	1 – 4
Feelings of anger	3.16 (0.77)	1 – 4	1 – 4
Anger dysregulation	2.33 (0.83)	1 – 4	1 – 4

Control variables

We controlled for four demographic variables: age, gender, and race/ethnicity of the adolescent, and mother’s education. Although the entire sample was exposed to domestic violence, there was variation in the sample in the amount of domestic violence they were exposed to; therefore, it was also controlled for to ensure this variation did not confound the analyses. Age was measured in years. Gender was coded as 0=female and 1=male.

Race/ethnicity was coded where 0=white and 1=all other race/ethnicities. Mother’s education was coded where 0=less than high school, 1=high school graduate only, and 2=more than high

school. Adolescent exposure to violence was divided into quartiles as described in Foshee et al. (2015). To measure adolescent exposure to domestic violence, mothers were asked to think about the abusive partner that the adolescent participant was around for the longest period of time. The mothers indicated how many times this partner had used the following abusive acts against them: "used a knife or gun on you," "beat you up," "hit you with a fist or with something else hard," "pushed, grabbed, or shoved you," "slapped or scratched you," "threatened you with physical harm," "insulted you," and "did something to humiliate you." They were then asked the percentage of these times the teen had heard or witnessed the abusive act. The number of times the teen had witnessed or heard each of these acts was then calculated and summed by study investigators. This score was coded into even quartiles, with the highest score 3=the greatest amount of exposure to domestic violence and the lowest score 0=the least amount of exposure.

Analytic Strategy

Given that CDA and IPDA perpetration are correlated, examining risk and protective factors for each mode of abuse separately and then looking across models would not account for this covariation in outcomes and would result in overestimation of the significance of associations (Haines, Kleinman, Rifas-Shiman, Field, & Austin, 2010). For example, when comparing models without accounting for the correlation in outcome, a risk and protective factor may be identified for IPDA but in fact it is a risk and protective factor for CDA instead or vice versa, and not actually shared by both modes of abuse. Therefore, we used the GEE approach to model the association between each risk and protective factor and IPDA and CDA, adjusting for the control variables. The GEE approach adjusts standard errors to account for the correlation between dating abuse outcomes (Haines, Kleinman, Rifas-Shiman, Field, & Austin, 2010). This strategy made it possible to determine whether a factor was shared by both modes of abuse,

unique to one mode of abuse, or not associated with either. Data were organized so that a row of data was included for each outcome for each participant (i.e. two rows per participant; one for the IPDA score and one for the CDA score). Next, we created an indicator variable (abuse mode) that was scored “0” for IPDA and “1” for CDA. For each risk and protective factor, a single-factor GEE model was estimated that included the factor, the abuse mode variable, the control variables, and the interaction between the factor and the abuse mode variable. Significant interactions ($p < .05$) indicated that the effect of the risk and protective factor varied depending on the abuse mode. If the interaction was not significant, which indicated the association between risk and protective factor and outcome did not vary depending on abuse mode, it was removed from the model and a homogeneous main effect of the factor was presented as a single odds ratio denoting the association between that factor and both dating abuse outcomes. Following these steps, we next ran a multivariable GEE model that included all of the risk and protective factors that were found in the single-factor models to be shared across both modes of dating abuse, all the significant interactions between the risk and protective factors and abuse mode, and the control variables. All non-significant interactions were dropped to produce the final multivariable model. An unstructured working correlation matrix was specified across all models since the data are balanced with an equal number of observations per participant and there are no missing data (Shults et al., 2009).

4.3 Results

Dating abuse mode prevalence

Approximately, 17% ($n=71$) of the adolescents reported perpetrating CDA (17% of the girls and 18% of the boys; $\chi^2=0.14$, $p=0.71$); 18% ($n=75$) reported perpetrating IPDA

(21% of the girls and 14% of the boys; chi-square=2.83, $p=0.09$). IPDA perpetration was significantly correlated with CDA perpetration ($r=.50$; $p<0.01$).

Results from the single-factor GEE models

Table 4.3 presents the adjusted odds ratios (AOR) and 95% confidence intervals (CI) from each single-factor GEE model adjusting for the control variables. None of the interactions between the risk and protective factors and mode of violence were significant and therefore they were dropped. This indicates that none of the risk and protective factors were unique to dating abuse mode. Therefore, the AOR and 95% CI were calculated for the homogeneous main effect and presented in columns 1 and 2 of the table.

After controlling for demographic variables and adolescent exposure to domestic violence, acceptance of dating abuse (AOR=2.34; $p<0.01$; CI (1.43, 3.84)), family conflict (AOR=1.41; $p=0.01$; CI (1.07, 1.86)), mother-adolescent discord (AOR=1.74; $p<0.01$; CI (1.26, 2.39)), depressed affect (AOR=1.84; $p<0.01$; CI (1.35, 2.49)), and anger dysregulation (AOR=1.54; $p<0.01$; CI (1.17, 2.05)) were associated with increased odds of perpetrating both IPDA and CDA. Maternal responsiveness (AOR=0.61; $p=0.02$; CI (0.40, 0.93)), maternal monitoring (AOR=0.70; $p=0.04$; CI (0.49, 0.98)), mother-adolescent closeness (AOR=0.77; $p=0.01$; CI (0.62, 0.94)), and family cohesion (AOR=0.70; $p=0.02$; CI (0.52, 0.93)) were associated with decreased odds of perpetrating both IPDA and CDA. Feelings of anger was marginally associated with increased odds of perpetrating both IPDA and CDA (1.34; $p=0.06$; CI (0.98, 1.83)). All of these associations were in the direction expected.

Table 4.3. Single factor GEE model parameter estimates (n=399)

Risk and Protective Factor	Homogenous Main Effect	
	AOR	95% CI
<i>Cognitions</i>		
Acceptance of dating abuse	2.34	1.43, 3.84
Perceived negative consequences	0.83	0.63, 1.09
<i>Competency</i>		
Conflict management skills	0.87	0.57, 1.36
<i>Family</i>		
Family conflict	1.41	1.07, 1.86
Mother-adolescent discord	1.74	1.26, 2.39
Maternal responsiveness	0.61	0.40, 0.93
Maternal monitoring	0.70	0.49, 0.98
Mother-adolescent communication	0.88	0.68, 1.34
Mother-adolescent closeness	0.77	0.62, 0.94
Family cohesion	0.70	0.52, 0.93
<i>Mental health attributes</i>		
Depressed affect	1.84	1.35, 2.49
Feelings of anger	1.34	0.98, 1.83~
Anger dysregulation	1.54	1.17, 2.05

a. AOR, Adjusted Odds Ratio; CI, Confidence Interval

b. Each model controlled for adolescent gender, age, race/ethnicity, mother's education, and exposure to domestic violence

c. Bolding represents statistically significant results ($p < .05$)

d. ~ represents marginal significant results ($p < .06$)

Results from the multivariable GEE model

There were no significant interactions in the single-factor models so none were included in the multivariable model. Table 4.4 presents the AOR and the 95% CI from the final multivariable GEE model. After controlling for demographic variables and adolescent exposure to domestic violence, acceptance of dating abuse (AOR=2.11; $p < 0.01$; CI (1.26, 3.52)), mother-adolescent discord (AOR=1.55; $p = 0.03$; CI (1.04, 2.29)), depressed affect (AOR=1.56; $p = 0.02$; CI (1.07, 2.27)), and anger dysregulation (AOR=1.47; $p = 0.02$; CI (1.06, 2.06)) continued to be significantly associated with increased odds of perpetrating both IPDA and CDA.

Table 4.4. Multivariable GEE model parameter estimates (n=399)

Risk and Protective Factor	Homogenous Main Effect	
	AOR	95% CI
<i>Cognitions</i>		
Acceptance of dating abuse	2.11	1.26, 3.52
<i>Family</i>		
Family conflict	0.96	0.68, 1.37
Mother-adolescent discord	1.55	1.04, 2.29
Maternal responsiveness	1.39	0.72, 2.71
Maternal monitoring	0.84	0.58, 1.24
Mother-adolescent closeness	0.88	0.63, 1.21
Family cohesion	0.83	0.59, 1.19
<i>Mental health attributes</i>		
Depressed affect	1.56	1.07, 2.27
Feelings of anger	0.77	0.53, 1.12
Anger dysregulation	1.47	1.06, 2.06

a. AOR, Adjusted Odds Ratio; CI, Confidence Interval

b. Model controlled for adolescent gender, age, race/ethnicity, mother's education, and exposure to domestic violence

c. Bolding represents statistically significant results ($p < .05$)

4.4 Discussion

Our findings suggest that CDA and IPDA share four modifiable risk and protective factors: acceptance of dating abuse (cognition), mother-adolescent discord (family characteristic), depressed affect (mental health attribute), and anger dysregulation (mental health attribute). Since the factors examined were based on social learning theory, social control theory, and emotional regulation, these frameworks can guide the development of interventions targeting both modes of dating abuse. Below we discuss the findings and make recommendations for incorporating these findings into interventions and future research.

There was no evidence of risk or protective factors that were unique to one dating abuse mode. We suggest two complementary interpretations for this finding. One interpretation is to suggest that CDA is a new *mode* of delivering psychological and sexual abuse rather than a new

type of abuse. Previously, the assumption that CDA was new mode of dating abuse rather than a new type was attributed to the co-occurrence of IPDA and CDA (Barter et al., 2015; Borrajo et al., 2015a). Our findings lend additional support to this argument as the only significant risk factors were shared by both modes of abuse. The second interpretation of the shared risk factors is to suggest that the two modes of abuse operate along similar theoretical lines. We conceptualized cognitions from a social learning theory perspective, family characteristics from a social control theory perspective, and mental health attributes from an emotional regulation perspective and factors from each of these domains were significantly associated with both IPDA and CDA. While not all factors from each domain were significantly associated with both modes of abuse, our findings suggest that the theories used to guide previous research on IPDA can be extended to help explain CDA perpetration.

While our findings demonstrate a potentially shared etiology between IPDA and CDA, there were also unexpected findings. Contrary to prior evidence, there were a large number of risk and protective factors that were not significantly associated with IPDA in the multivariable GEE model. While significant in the single GEE models, all of the family protective factors including maternal responsiveness, maternal monitoring, mother-adolescent closeness, family cohesion and the family conflict risk factor became nonsignificant in the multivariable model. These findings suggest that family-related protective factors may be overcome by or operate through cognitions such as acceptance of dating abuse and mental health attributes such as depressed affect and anger dysregulation as previously suggested for IPDA (Jouriles et al., 2012) and for cyber aggression against peers (Kellerman, Margolin, Borofsky, Baucom, & Iturralde, 2013). Alternatively, family protective factors that became nonsignificant in the multivariate model may not impact IPDA or CDA, but instead are correlated with the significant risk factors,

which are associated with IPDA and CDA perpetration. However, the fact that mother-adolescent discord remained significant while family conflict did not in the multivariable model is an unexpected finding since both measure negative aspects of the family environment. This finding suggests that mother-adolescent discord may have a stronger relationship with dating abuse than other family characteristics, which should be further examined in subsequent studies. Additionally, competencies, measured by conflict management skills, were not significant in either the single factor GEE model or the multivariable GEE model. Similar to conclusions in Foshee et al. (2007), our findings suggest that competencies may be less important than other factors for both IPDA and CDA.

Our findings have several implications related to intervention development, future research, and measurement of dating abuse. First, our findings suggest interventions can target both IPDA and CDA concurrently. Prevention strategies targeting both modes of abuse would be more economical and time efficient than addressing the modes separately (DeGue et al., 2013). Further, our findings suggest that it is appropriate to use social learning theory, social control theory, and emotional regulation perspectives to guide intervention development. For example, some dating abuse interventions designed for general adolescent populations have been guided by social learning theories (for reviews see De Koker, Mathews, Zuch, Bastien, & Mason-Jones, 2014; Whitaker, Murphy, Eckhardt, Hodges, & Cowart, 2013). There are many existing interventions that can inform the development of programs to address both modes of dating abuse perpetration or tailored to include CDA. For example, programs for adolescents exposed to domestic violence have been found to be effective in decreasing depressed affect and anger dysregulation in children (Cohen et al., 2016; Graham-Bermann, Lynch, Banyard, DeVoe, & Halabu, 2007) and while they did not look at mother-adolescent discord they are effective at

reducing family conflict (McDonald, Jouriles, & Skopp, 2006). However, these interventions targeted children rather than adolescents (Cohen et al., 2016; Graham-Bermann et al., 2007; McDonald et al., 2006). Interventions targeting attitudes towards the acceptability of sexual abuse have typically focused on college students and with limited effectiveness (for review see DeGue et al., 2014). Examining the strategies used in these previous interventions is helpful to informing future interventions but it is important to also evaluate their effectiveness at targeting both IPDA and CDA among adolescents exposed to domestic violence.

While the findings provide evidence to inform interventions, there is a need for subsequent longitudinal follow-up studies to determine the temporal relationship between factors. Due to the cross-sectional design we could not distinguish a predictor from a consequence of dating abuse. For example, attitudes that are accepting of dating abuse are consistently associated with IPDA (Foshee et al., 2001; Malik, Sorenson, & Aneshensel, 1997; O'Keefe, 1997; Wolfe et al., 2004) but have not consistently predicted IPDA (Foshee et al., 2001; Wolfe et al., 2004). Future studies examining shared risk and protective factors for IPDA and CDA perpetration should use longitudinal data and analytic techniques that control for both the covariation in outcomes as well as the temporality of relationships. Though we identified several shared risk and protective factors, there may be additional factors that are associated with CDA that have not been identified in part because it is such a recent area of study. Future studies should include other longitudinal predictors of IPDA such as peer use of dating abuse (Arriaga & Foshee, 2004; Foshee et al., 2001), substance abuse (Foshee et al., 2001; Temple, Shorey, Fite, Stuart, & Le, 2013), and bullying (Foshee et al., 2014) in order to understand the full extent to which CDA and IPDA share risk and protective factors among high-risk adolescents (for review see Vagi et al., 2013). Researchers may also want to examine other risk and protective factors

that may be particularly relevant to CDA. For example, race/ethnicity differences have been found in risk and protective factors for IPDA perpetration (Foshee et al., 2010; Niolon et al., 2015) suggesting that future studies should also examine if there are sub-group differences in risk and protective factors that are shared across abuse mode. The sample size was too small in this study due to the analytic strategy used to examine differences in sub-groups. Additionally, while our findings lend evidence to argument that CDA perpetration may be better conceptualized as a mode of abuse perpetration rather than a distinct type of dating abuse, the temporal relationship between CDA and IPDA needs further investigation. For example, some researchers suggest that it is possible that CDA perpetration may be a risk factor for IPDA (Kellerman et al., 2013).

While we sought to compare factors associated with IPDA and CDA, the comparison is confounded with dating abuse type. The measure we used for IPDA was limited to physical and sexual abuse that occurred in-person whereas the CDA measure was comprised of items assessing psychological and sexual abuse that occurs through technology. Stronger measures would have allowed us to assess factors associated with in-person compared to cyber psychological abuse and in-person compared to cyber sexual abuse. Subsequent to the data collection for the current study, several researchers have developed and tested scales for measuring CDA that are promising, including the Controlling Partners Inventory (Burke et al., 2011) and the Scale for Interpersonal Electronic Surveillance for Social Networking Sites (Tokunaga, 2011). While both of these scales are helpful, they focus on evaluating the controlling aspects of dating such as technology-based monitoring pointing to a need for additional measurement research to capture both controlling behaviors as well as direct psychological and sexual abuse. Beyond the development of new CDA scales, it is important that

we update pre-existing measures used to accurately capture IPDA. For example, of the four papers examining the co-occurrence of psychological CDA and IPDA, Zweig et al. (2013) used a combination of measures from the *Michigan Department of Community of Health* study, the *Canadian Housing Family* study, as well as Foshee's (1996) *Safe Dates Psychological Dating Abuse Scale*, Cutbush et al. (2012) used items from Foshee's (1996) *Safe Dates Psychological Dating Abuse Scales*, Temple et al (2016) used the *Conflict in Adolescent Dating Relationships Inventory* (CADRI) from Wolfe et al. (2001), and Barter et al. (2009) used a combination of items from the *Conflict Tactics Scale* (Straus, Hamby, BoneyMcCoy, & Sugarman, 1996) and semi-structured interview questions. In all four articles, the items used to capture psychological IPDA did not specify if the abuse occurred in-person or through technology. For example, in Barter et al. (2009) participants were asked if they had ever threatened to hurt their romantic partner and subsequently asked if they had ever threatened to hurt their romantic partner using a mobile phone. Future research needs to incorporate measures that capture both modality and type of dating abuse in order to more accurately understand the potential influence technology has on different types of dating abuse.

This study had several limitations. Sample characteristics suggest that the convenience sample used in this study is not representative of all adolescents exposed to domestic violence in the US. Approximately 60% of the mothers in the sample were unemployed, 64% were single and 84% of the families received public assistance, which suggests the sample was primarily composed of lower SES families. Therefore, findings may not generalize to adolescents at higher SES levels. The sample was also composed of adolescents exposed to violence against their mother who were not in abusive relationships at the time of the study so findings may not be generalizable to adolescents exposed to violence against their mother's romantic partner or

adolescents whose mothers are currently in abusive relationships. Further, findings cannot be generalized to all adolescents, as those who have been exposed to domestic violence are likely different than those who have not been exposed. Future research should examine if there are differences between the amount, duration, and proximity of domestic violence exposure with respect to the relationship between risk and protective factors and dating abuse perpetration. Data were collected via telephone interviews which may have resulted in underestimates of the amount of dating abuse reported because social desirability bias has been found to be greater when data collection occurs over the telephone with an interviewer (Bowling, 2005; Holbrook, Green, & Krosnick, 2003).

4.5 Conclusion

We found several risk and protective factors that were shared across both IPDA and CDA perpetration suggesting that these two modes of abuse may share a similar etiology or that the mode of abuse delivery does not change the factors associated with dating abuse. These findings suggest that prevention programs can effectively target both modes of dating abuse. However, additional research is needed to help explicate the etiology of CDA perpetration including better understanding of the underlying motivations for this mode of abuse. Stronger measures that accurately capture both mode and type of abuse will aid in this endeavor.

CHAPTER 5: DISCUSSION & CONCLUSIONS

Overall this dissertation sought to better understand how technology is influencing adolescent romantic relationships. The two aims of this dissertation research were to (a) better understand how adolescents use technology in their romantic relationships and their perceptions surrounding what influences this use and (b) examine whether risk and protective factors are shared by CDA and IPDA perpetration or whether they differ depending on mode of abuse. In this final chapter, I review the key findings from the manuscripts examining these two aims, detail the potential limitations of both aims, and conclude with a discussion of the implications of this dissertation along with recommendations for future research.

5.1 Summary of Findings

The findings from the study examining Aim 1 suggested that there is a pressure to stay connected to peers and partners through technology and that technology-based communications fosters emotional detachment. Further, I presented evidence to suggest that emotional detachment, while offering the potential benefit of reduced social anxiety, engenders unhealthy behaviors in romantic relationships. Specifically, technology-based communications enable adolescents to behave in ways- often explicitly abusive or bordering on being abusive- they would not in-person lending additional support to the Online Disinhibition Effect that suggests technology may support disinhibition (Suler, 2004).

In the study examining Aim 2, I provided evidence that lends support to the idea that CDA and IPDA perpetration share a similar etiology due in part to the shared risk and protective

factors between the two modes of abuse. Specifically, I found that CDA and IPDA perpetration shared factors drawn from cognitions, family characteristics, and mental health attributes conceptualized from several theoretical perspectives. These findings and the theories used to conceptualize the factors can be used to develop intervention approaches that target both modes of abuse.

Taken together, the findings highlight the important role technology plays in romantic relationships and suggest that pre-existing approaches to preventing dating abuse can be tailored or new interventions developed that target all modes of dating abuse. Both the qualitative and quantitative evidence showed that adolescents are using technology to abuse their romantic partners. While, my findings from the study addressing Aim 2 suggest that it is likely that CDA perpetration operates along similar developmental pathways as IPDA, adolescents in the focus group discussions from the study addressing Aim 1 spoke about perpetrating CDA but not IPDA suggesting there may still be a group of single mode perpetrators. The findings also raise a number of questions for subsequent research, which are discussed later in this chapter.

5.2 Potential Limitations

While this dissertation has many strengths, findings from both aims should be considered in light of certain limitations. The samples used in the studies addressing Aim 1 and Aim 2 were independent samples recruited through different methods at different times. Further, they drew from slightly different populations. Comparing the demographic characteristics, the two samples were broadly similar but still different. The average age of participants in the study addressing Aim 1 was 17 years of age while in the study addressing Aim 2 it was 13.6 years of age. Additionally, the majority of participants in the study addressing Aim 2 were Black (54.8%), whereas the plurality of participants in the study addressing Aim 1 were White (40%). Further,

all of the adolescents in the study addressing Aim 2 had been exposed to domestic violence whereas it is unknown if any of the adolescents from the study addressing Aim 1 had exposure to domestic violence. Therefore, integration of the findings must be done cautiously since the samples may not be sufficiently similar.

Convenience samples were used in both studies. The sample used in the study addressing Aim 1 was drawn from a convenience sample from a single public high school that were willing to participate in a focus group following the end of the school day. Further, while I did not explicitly inform potential participants about the nature of my study, I told them that the focus groups would be about technology use. It might be that individuals with a particular interest in technology were more likely to attend the focus groups. This sample may systematically differ from the general population of adolescents. However, adolescents reported a range of technology use across the groups. Sample characteristics from the study addressing Aim 2 suggest that the convenience sample used in this aim is not representative of all adolescents exposed to domestic violence in the US. Approximately 60% of the mothers in the sample were unemployed, 64% were single and 84% of the families received public assistance, which suggests the sample was primarily composed of lower SES families. Therefore, findings may not generalize to adolescents at higher SES levels. The sample was also composed of adolescents exposed to violence against their mother who were not in abusive relationships at the time of the study so findings may not be generalizable to adolescents exposed to violence against their mother's romantic partner or adolescents whose mothers are currently in abusive relationships.

Both studies relied on self-report. While I took measures during data collection for the study addressing Aim 1 to reassure participants that everything they said in the groups would remain confidential it is possible that their responses suffer from some social desirability bias.

However, the goal of the discussions was to get at the perceptions of adolescents, which are inherently informed by the perceptions of their peers. Therefore, a strength of the focus group design is allowing us to understand how social desirability plays out among peers with respect to technology use. In the study addressing Aim 2, data were collected via telephone interviews which may have resulted in underestimates of the amount of dating abuse reported because social desirability bias has been found to be greater when data collection occurs over the telephone with an interviewer (Bowling, 2005; Holbrook et al., 2003).

With respect to the study addressing Aim 2, due to the cross-sectional design I could not distinguish a predictor from a consequence of dating abuse. Future studies examining shared risk and protective factors for IPDA and CDA perpetration should use longitudinal data and analytic techniques that control for both the covariation in outcomes as well as the temporality of relationships. The measures I used in the study addressing Aim 2 necessitate additional discussion. I contrasted psychological and sexual CDA to physical and sexual IPDA rather than directly comparing psychological and sexual abuse via the two different modes. I wanted to ensure that I was only examining behaviors that occurred via a singular respective mode in order to allow for a more straightforward interpretation of the results. Stronger measures would have allowed me to make a direct comparison between abuse types for each mode.

5.3 Implications for Research and Future Directions

Taken together, the findings from this dissertation point to three key next steps for future research on technology-use in adolescent romantic relationships. First, dating abuse and relationship interventions and programs need to be updated or developed to accurately reflect the role technology plays in adolescent dating relationships and CDA. Second, measures to capture both mode (cyber vs. in-person) and type (psychological, sexual, and physical) of dating abuse

are needed. Developing stronger measures also necessitates better understanding of the nature and dimensions of CDA. Third, research is needed to examine if and how additional factors influence CDA.

Findings from this dissertation can be used in the immediate future to develop intervention approaches to help promote healthy adolescent relationships. Specifically, interventions can use information shared by participants in Aim 1 to ensure that interventions reflect adolescent uses of technology. For example, interventions can incorporate messages that convey the drawbacks of technology-use in romantic relationships such as feeling forced to remain in constant contact with partners. Approaches should also encourage adolescents to set boundaries with their partners about the amount and timing of contact. In my study, adolescents reported that sometimes they would simply ignore messages from their partners when they began to feel frustrated by the amount of contact. However, this ignoring often led to increased contact and harassment. Second, because participants frequently described cyberstalking as acceptable behavior, it is important that interventions help adolescents identify early monitoring behaviors as abusive before they reach unhealthy levels or turn in to more abusive and controlling behaviors. Third, findings from Aim 2 suggest that family characteristics such as mother-adolescent discord are associated with increased CDA perpetration. This points to the need for intervention approaches that target parents as well as individual adolescents. In addition to approaches to improve dynamics between parents and their children, interventions can provide parents with information and skills to initiate conversations about technology with their children. Along with parents, findings from Aim 1 suggest peers play a salient role in adolescent use of technology. For example, participants discussed their perception that there is a social pressure to use technology to communicate. In an effort to address peer involvement in romantic

relationships, interventions can incorporate bystander messages. Bystander messages teach peers how to intervene in situations where dating abuse may occur (Banyard, Plante, & Moynihan, 2004; McCauley et al., 2013). By educating adolescents about the ways peers contribute to potentially unhealthy romantic relationship behaviors along with skills to positively intervene, adolescents will gain the tools to use technology responsibly and in healthy productive ways. However, empirical research is needed to determine the benefits of bystander messages in addressing technology-use in romantic relationships. Due to the ever-evolving nature of technology, it is also important that researchers develop interventions that are adaptive to the changing technological landscape. Further, it is likely that interventions will need to be regularly updated in order to reflect current technological trends.

While the dissertation findings contribute valuable knowledge to the field, we still need to better understand the nature and potential dimensions of CDA perpetration. Findings from Aim 1 suggest that there are adolescents who are checking/monitoring partners as a means of maintaining control in a relationship (controlling) and also adolescents that send verbally abusive messages or attempting to publicly humiliate their partner by posting information about them on public forums (direct). In Aim 2 I used a unidimensional measure of CDA. Pre-existing measures are inconsistent in their examinations of CDA. For example, the majority of scales focus on specific dimensions of CDA such as controlling behaviors (Burke et al., 2011; Fox & Tokunaga, 2015; Tokunaga, 2011) or direct aggression and humiliation (Zweig et al., 2013a). However, in looking across the findings from Aim 1- where adolescents described controlling/monitoring behaviors as separate from direct aggression- it seems that CDA may be more appropriately treated as a multi-dimensional phenomenon.

Alongside an improved understanding of CDA conceptually, we also need to develop measures that can capture both mode and type of abuse. Researchers tend to use pre-existing measures when examining IPDA and new measures for CDA (Temple et al., 2016; Zweig et al., 2013a). In recent years there has been increasing attention to the development of measurement tools to accurately capture CDA (Borrajo et al., 2015b; Sánchez, Muñoz-Fernández, & Ortega-Ruíz, 2015; Tokunaga, 2011). However, these new tools have been tested among young adults rather than adolescents. Additionally, pre-existing dating abuse measures are typically phrased in such a way that does not allow researchers to differentiate between behaviors that occur in-person or through technology. For example, one scale frequently used to examine psychological dating abuse is the Conflict Tactics Scale (Straus et al., 1996). However, items used to capture psychological dating abuse in this scale do not ask if the behaviors occurred in-person or via-technology. When responding to these items, adolescents may be reporting abuse that occurred through technology rather than abuse that occurred in-person. Therefore, when previous studies have reported that psychological IPDA and CDA co-occur, the co-occurrence may be due to the fact that the measures were capturing the same behavior rather than evidence of a relationship between in-person and cyber abuse. Even if CDA is conceptualized as a new type of abuse rather than a different mode, it is important that measures be tailored to be specific in asking about if behaviors occurred in-person or through technology. Further, additional research is needed to see if these new measures accurately capture CDA perpetration among adolescent populations.

The need for updated measures is not just limited to dating abuse. Technology may impact many of the factors we use to examine dating abuse. For example, contrary to previous evidence, I did not find any family protective factors to be significantly associated with either IPDA or CDA in Aim 2. While this nonsignificant finding may be attributable to family

protective factors operating through cognitions or mental health attributes, it may be due to the increasing role technology is playing in family interactions. Technology use is not limited to young people. Over 64% of the general population in the US reports owning a smartphone (Smith & Page, 2015). Some researchers suggest that family and other interpersonal interactions are increasingly migrating into digital spaces and in turn these interactions have a reduced protective effect on risky behaviors (Gardner & Davis, 2013; Turkle, 2012). For example, conversations with parents may now occur through text message rather than in-person. So while a parent may report that they are monitoring their adolescent's behavior or telling their child that they love them, the quality or impact of this monitoring or warmth may be diminished because it is occurring via technology rather than in-person (Turtle, 2012, 2016). Indeed, adolescents reported that interactions through technology often "feel less real" and "mean less" than those that occur in-person in my focus group discussions. Therefore, when examining interpersonal factors related to dating abuse, it will be important that measures capture the mode of interaction alongside the behaviors.

In addition to developing interventions and strengthening our measures to capture dating abuse, it is important that subsequent research examine other factors that may influence unhealthy technology-based communications in adolescent romantic relationships. For example, though I could not examine emotional detachment in Aim 2, it appears that this may be an important factor influencing adolescent use of CDA based on the findings from Aim 1. While in some cases this detachment was considered beneficial- as it was perceived to improve communication between partners- in most cases the detachment was viewed as harmful. It is important that future research examine what factors may contribute to increased harmful emotional detachments along with determining if there are modifiable factors that can decrease

harmful detachment. For example, does the amount of technology-based communication influence the amount of harmful detachment experienced by an adolescent? Findings from Aim 1 also point to different types of technology users. Specifically, when discussing their use of technology adolescents tended to fall into distinct categories of low, medium, and high technology users. There is some evidence to suggest that increased technology use is associated with increased cyberbullying among young adolescents (Ybarra & Mitchell, 2004). However, no studies have examined the relationship between amount of technology-based communication and adolescent dating abuse. Future research can go as far as to determine if there are latent subgroups driven by technology consumption/use and determine if these groups have different relationships with risk and protective factors. In addition to the amount of technology-based communication used, there may be differences between adolescents who replace in-person communication with technology-based communication rather than use it as an additive element. Specifically, some suggest that adolescents who replace in-person interactions with technology-based interactions may experience more harmful detachment than adolescents using technology-based communications in addition to in-person interactions (Gardner & Davis, 2013; Turkle, 2012). Experts hypothesize that using technology as a replacement for in-person interactions may prevent adolescents from developing necessary social skills which may foster unhealthy disinhibition (Gardner & Davis, 2013).

5.4 Conclusions

CDA is an emerging area of study with important potential consequences for adolescent health and well-being into adulthood. This dissertation contributes important knowledge for this body of work, but future research will need to continue to examine this evolving concept and provide clear recommendations for interventions. Given the importance of both technology and

romantic relationships in adolescent's lives, this is an area of critical importance for ensuring a healthy transition to adulthood.

APPENDIX: AIM 1 FOCUS GROUP DISCUSSION GUIDE

Digital Communication and Dating Focus Group

Location:

Date:

Time Started:

Time Ended:

Number of participants:

Focus Group/Interview Guide

Writing in *italics* will not be read out loud to participants – Everyone should have signed the assent forms even if they are 18-

The goal of our discussion today is to learn more about how teens use technology in romantic or dating relationships. We are interested in learning about how technology is used to start or begin a relationship, how it is used during the relationship and how it is used to end a relationship. We are also interested in hearing about both good ways and bad ways that technology is used in romantic/dating relationships.

There are no wrong answers to any of these questions. I also want to remind you that your participation is voluntary and you don't have to respond to any questions you do not want to and can stop at any time. I also want to remind you all that everything we talk about today is confidential and should not be shared without anyone outside of the group. With that in mind, please sign the confidentiality pledge I handed out.

Thank you so much for agreeing to keep everything we talk about today confidential. I also want to remind you that nothing will be shared with anyone outside the group including parents, teachers, or peers. We want to hear all of your thoughts and feelings. You have all agreed to allow me to record the focus group today, so I am going to go ahead and start the recording now.

Before we get started, why don't we go around the room and everyone can introduce themselves tell me how long you think you could live without your phone and one other fun fact about yourself?

Does anyone have any questions before we get started?

Great!

I. Defining Technologies

Ok, so when I say technology, what comes to mind?

So when I say technology I'm talking about phones, apps, computers, websites etc. so really all the ways you use electronics to communicate with other people.

(Refer to flip board). I want you all to take a second to think about all the different types of technologies, including devices (phones, computers, gaming consoles etc.) and apps you use to interact with or communicate with your friends. Shout them out and I am going to write them on the flip board.

I'm going to put three stars by the 3 or 4 that teens use most often. Where should I put the stars?

II. Technology used to Start or Begin a Dating relationship

1. Ok, so where do you look for romantic partners? Where do you think people your age look for people they'd be interested in?
(How or where do teens find people they are interested in romantically?)(Are they meeting at school, online, camps)
 - a. What do you think is the most common? *Probe for specifics (like for on-line probe how teens find on-line people of interest; if in school probe if it is people in same classes etc., also probe on if boys/girls seek out partners in different ways)*
2. How do teens let people know that they are interested in them romantically? [*get at in-person, telephone, technologies*] [*Probe for more details on how technologies are used to indicate romantic interests. Get examples.*]
 - a. *Probe:* Think back to a time you may have used technology at the start of a relationship. What types of things did you do to show you were interested in someone?
 - b. Do boys/girls show interest differently? If yes, how so?
3. Do you use different technologies depending on how you know the person you're interested in?
 - a. Do the technologies differ depending on how the teen knows the person? Give me some examples.
4. Why do you think teens would use technologies to show that they are interested in someone interest? *Probe:* What are some of the benefits?
 - a. *Sum up examples and confirm if you are getting it right. Probe for additional ideas and examples*
5. Can you tell me some reasons why you might think twice about using technology to express interest in someone? What about other teens?
 - a. *Sum up examples and confirm if you are getting it right. Probe for additional ideas and examples*
6. What are some of the bad parts of using technologies to start a relationship?
 - a. *Sum up examples and confirm if you are getting it right. Probe for additional ideas and examples*

III. Technology Used During a Romantic/Dating Relationship

Now let's talk some about how technologies are used **during** romantic/dating relationships.

1. So there are all types of romantic relationships? Do you have different names for different types of relationships for people you are interested in?
 - a. Can relationships can vary in seriousness?- if they agree- *Draw line and mark nor serious at one end to very serious at the other end.*

- i. Give me examples of types of relationships that are not serious; what about more serious; ok what about very serious.
 - b. What are some of the things that make this relationship more serious? *Point to different things they came up with*
 - c. What are some defining features of those kinds of relationships? For example, what makes *point to less serious type of relationship* different than *point to more serious relationship*. [*Then move up the serious continuum getting the characteristics of types of relationships*]
 - i. Give me some examples of how technologies are used in these less serious relationships.
2. Does the use of technology change as a relationship becomes more serious? *If yes, ask how it changes and if there are differences for boys/girls.*
3. What are some reasons why you might think twice about using technology to during a relationship? What about other teens?
 - a. *Sum up examples and confirm if you are getting it right. Probe for additional ideas and examples*
4. What (type of) things do people say or do to romantic/dating partners using technology that they would not say to them or do in person? Examples?
 - a. Why do you think they would say/do it using technology but not in person?
 - b. *Probe on if it is different for boys/girls if they come up with examples*
5. When teens in a relationship are arguing or having a disagreement, how is that typically done [in person, texting, etc]?
 - a. Why is it done this way? Is it different for boys/girls? [*eventually ask about the advantages and disadvantages of having an argument using technology verses in-person*]
6. What are some of the reasons its good or helpful to use technology with someone you are dating? Probe: What are some of the benefits?
 - a. *Sum up examples and confirm if you are getting it right. Probe for additional ideas and examples*
7. What some of the reasons why you wouldn't want to use technologies during a relationship [in ways described earlier?]?
 - a. *Sum up examples and confirm if you are getting it right. Probe for additional ideas and examples- can combine with below (are these harmful etc.)*
8. Are there ways that technology is used during relationships that are harmful? Examples?
 - a. *If yes, probe on frequency, "How often does this happen?"*

IV. Technology Used to End a Relationship

Now I would like to ask a few questions about how teens **end** romantic or dating relationships.

1. What would you call it when you are ending a romantic relationship?
2. When someone wants to “break-up” *word they use* with someone, how do they usually do it?
 - a. *Probe on how technology is used to end a relationship. Ask for examples of what people say or do. Ask if boys/girls break-up in different ways.*
3. I’d like to put an E next to the technologies you listed earlier that teens use to end a relationship. Where should I put the Es?
 - a. *Probe on why these technologies are used, what characteristics about them are important to participants.*
4. How does the seriousness of the relationship change how a couple breaks up?
 - a. *Probe using relationship types and ask for examples.*
5. Does a person with reacts differently depending on whether the break-up was in-person or done with technology? How is it different?
6. Is there anything that would make you hesitate or think twice about using technology to end a relationship?
 - a. *Sum up examples and confirm if you are getting it right. Probe for additional ideas and examples*
7. What are the advantages of breaking-up using technology?
 - a. *Sum up examples and confirm if you are getting it right. Probe for additional ideas and examples*
8. Are there bad things that can happen when using technologies to break up? Examples?
9. Are there bad/harmful things that are done with technology after a relationship has ended?
 - a. *Sum up examples and confirm if you are getting it right. Probe for additional ideas and examples*

V. Closing

Thank you all so much for participating in this discussion. As we wrap up, is there anything else that you think it is important for us to know about how teens use technology in relationships?

Great. Thank you again. Please feel free to contact me if there is anything you want to add or discuss about our conversation today.

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