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The Temporal Association Between Traditional and Cyber Dating Abuse Among Adolescents

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Abstract While research has explored adolescents' use of technology to perpetrate dating violence, little is known about how traditional in-person and cyber abuse are linked, and no studies have examined their relationship over time. Using our sample of 780 diverse adolescents (58 % female), we found that traditional and cyber abuse were positively associated, and cyber abuse perpetration and victimization were correlated at each time point. Cyber abuse perpetration in the previous year (spring 2013) predicted cyber abuse perpetration 1 year later (spring 2014), while controlling for traditional abuse and demographic variables. In addition, physical violence victimization and cyber abuse perpetration and victimization predicted cyber abuse victimization the following year. These findings highlight the reciprocal nature of cyber abuse and suggest that victims may experience abuse in multiple contexts.

Keywords Dating violence · Cyber abuse · Adolescents · Longitudinal

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Introduction

A substantial number of adolescents experience psychological (e.g., yelling, insulting, and name-calling) and physical (e.g., hitting, slapping, kicking, and choking) abuse in their dating relationships. Prevalence estimates range from 5 to 30 % for physical abuse and 20 to 70 % for psychological abuse, with large ranges due to variations in the samples and measures used (Stonard et al. 2014). Furthermore, physical and psychological abuse perpetration often co-occur, with psychological abuse nearly always present if physical abuse is present (O'Leary et al. 2008; Stonard et al. 2014).

Adolescents victimized by dating abuse are at risk for numerous mental health, physical health, and behavioral problems such as depressive symptoms, suicidal ideation, delinquent behavior, substance use, and poor academic performance (Eaton et al. 2007; Temple and Freeman 2011). In fact, a recent study found that adolescent girls victimized by dating abuse reported increased alcohol use, tobacco use, depressive symptomology, and suicidal ideation relative to those who did not experience dating abuse (Exner-Cortens et al. 2013). Adolescent boys victimized by dating abuse endorsed increased suicidal ideation, marijuana use, and antisocial behaviors compared to adolescent boys who were not victimized. Abusive dating experiences during adolescence are also related to adverse health outcomes, including early sexual activity, sexually transmitted infections, pregnancy, and physical injury (Decker et al. 2005; Foshee et al. 2013). Moreover, a growing body of literature supports a link between exposure to dating abuse during adolescence and both perpetration and victimization of intimate partner violence in adulthood (Gomez 2011; Sunday et al. 2011). Given the immediate and long-terms effects of adolescent dating abuse, it is imperative for

researchers to elucidate factors related to perpetration and victimization. Efforts to understand this prevalent social problem often fail to consider the role of technological advancements. Thus, the present study will extend adolescent dating abuse literature by longitudinally examining the link between adolescents' traditional and cyber dating abuse perpetration and victimization. Intervention efforts will be informed by a better understanding of how cyber dating abuse relates to traditional dating abuse.

Adolescents' Use of Technology and Cyber Dating Abuse

Adolescents aged 12–17 are more likely than any other age group to use technology to communicate (Jones and Fox 2009). Data from the PEW Research Center's Teens' Relationships Survey indicated that 92 % of adolescents ages 13–17 reported using the internet daily, and 24 % reported going online "almost constantly" (Lenhart 2015). With nearly three-quarters of adolescents having access to smartphones (Lenhart 2015), internet and social media sites are easily accessible. Indeed, 71 % of teens used more than one social media site (e.g., Facebook, Instagram, and Twitter). Furthermore, 90 % of teens with mobile phones used text messaging to send and receive an estimated 60 texts daily (Jones and Fox 2009; Lenhart 2015). Together, these findings suggest that adolescents have access to various modes of seeking and sharing information with virtually constant access to peers. Despite the benefits offered by adolescents' connection to peers (Lee 2009), researchers suggest that the minimal privacy experienced by adolescents as a result of technological advances may facilitate unhealthy relationship behaviors (King-Ries 2011).

The popularity of text messaging, social media, and internet use among adolescents may create opportunities for cyber dating abuse, defined herein as monitoring, controlling, harassing, or otherwise abusing a dating partner via technology (Barter et al. 2009; Zweig et al. 2013). With a sample of young adults aged 18–21, Draucker and Martsolf (2010) provided examples of ways in which technology was used to monitor, control, and verbally/emotionally abuse a partner. Most commonly, respondents disclosed using mobile phones and text messaging to monitor a partner's activities. Other behaviors included going through a partner's messages without their knowledge, leaving threatening voice and text messages for a partner, threatening to harm a partner if he or she did not respond to a message, and posting insulting or threatening content about a partner publicly online (Draucker and Martsolf 2010). Using a sample of adolescents ages 12–18, Zweig et al. (2013) identified that the use of a partner's social networking account without his or her permission

was the most frequent form of cyber dating abuse followed by sexual cyber abuse (e.g., receiving unwanted sexually explicit photos/text messages from a partner), and sending threatening and intimidating text messages/emails to a partner. Although there is some debate regarding the distinction between cyber and psychological dating abuse (e.g., Zweig et al. 2013), the present study conceptualizes cyber abuse as a distinct form of abuse which may be a vehicle for psychological abuse but is manifested in unique ways (e.g., verbally abusing, monitoring, and controlling a partner to whom one has almost constant access; Draucker and Martsolf 2010).

Although research on cyber dating abuse is in its infancy, early reports indicate that it is occurring with some frequency. In a school-based sample of students in grades 7 through 12, Zweig et al. (2013) reported that 22 % of youth endorsed being victimized by cyber dating abuse and 10.5 % of youth perpetrated cyber dating abuse in the previous year. Nearly one in ten teens (8.6 %) endorsed reciprocal cyber dating abuse perpetration, and adolescent girls were more likely than boys to endorse reciprocal or perpetration-only cyber dating abuse (Zweig et al. 2013). In a sample of more than 4200 ninth-grade students across 11 states, 56 % reported cyber dating abuse victimization and 29 % endorsed perpetrating some form of cyber dating abuse (Cutbush et al. 2010). As with traditional dating abuse, the varying rates of perpetration and victimization are due, in part, to differences in samples and measures used. Nonetheless, the literature has highlighted that cyber dating abuse is a prevalent problem among youth.

Despite the varying prevalence rates, as many as 60 % of adolescents acknowledged cyber dating abuse was a serious problem among their peers (Picard 2007). Indeed, some researchers speculate that cyber dating abuse may have a unique impact on adolescents separate from in-person psychological abuse due to the opportunities to publicly humiliate and maintain constant contact with a partner, even after the relationship ends (Draucker and Martsolf 2010).

Adolescents' Traditional and Cyber Dating Abuse

According to Barter et al. (2009), the opportunities provided by technology to monitor, control, and verbally abuse a dating partner may relate to abusive behaviors between dating partners offline. While research has elucidated the link between other online and offline behaviors (e.g., teen sexting and sexual behavior, Temple and Choi 2013; cyberbullying and in-person bullying, Waasdorp and Bradshaw 2015), only a few studies have examined associations between traditional and cyber dating abuse among adolescents. Results from Zweig et al. (2013) showed that half of adolescent victims of cyber dating abuse were also

victimized by *physical* dating abuse, and almost all cyber dating abuse victims experienced traditional *psychological* abuse. Similarly, Cutbush et al. (2010) reported that both cyber dating abuse perpetration and victimization positively related to psychological, physical, and sexual dating abuse perpetration and victimization as well as offline stalking behaviors. Together, these findings provide preliminary evidence that traditional and cyber dating abuse co-occur in adolescents' romantic relationships.

Although few studies have explored traditional and cyber dating abuse perpetration and victimization concurrently, there appears to be similarity with regards to prevalence rates and gender patterns. As is true with traditional dating violence (O'Leary et al. 2008; Renner and Whitney 2010), adolescents were more likely to endorse cyber dating abuse victimization than perpetration (Cutbush et al. 2010). Additionally, girls were more likely than boys to endorse both cyber and psychological dating abuse victimization whereas boys were more likely to endorse physical abuse victimization (Zweig et al. 2013). Despite the cross-sectional nature of existing data, these findings support a link between adolescents' experiences with traditional and cyber dating abuse. Specifically, these studies evidenced similar patterns of perpetration and victimization within traditional and cyber dating abuse. However, the absence of longitudinal data obscures conceptualizations of how patterns of cyber abuse perpetration and victimization develop over time.

Informed by social learning theory (Bandura 1977), Riggs and O'Leary (1989) situational model of dating violence posits that adolescents who are recipients of dating abuse are at increased risk of perpetrating dating abuse. Indeed, previous studies note the reciprocal nature of both traditional (O'Leary et al. 2008) and cyber (Zweig et al. 2013) dating abuse. The reciprocal nature of cyber dating abuse should therefore be evident longitudinally. Additionally, Riggs and O'Leary's contextual model of dating abuse indicates that individuals who experience aggression in one context (i.e., traditional dating abuse) would be more likely to perpetrate aggression in a second context (i.e., cyber dating abuse). Indeed, previous studies support a relation between traditional and cyber dating abuse (Cutbush et al. 2010; Zweig et al. 2013). According to Riggs and O'Leary's theoretical model, this relationship should be evident over time. What remains unclear is how patterns of adolescent cyber dating abuse perpetration and victimization emerge in relation to traditional dating abuse. As previous research is limited to cross-sectional data, less is known regarding whether cyber dating abuse is a single or continuous occurrence after controlling for the effects of traditional dating abuse. Thus, additional research is needed to elucidate the continuation of cyber dating abuse over time in relation to traditional dating abuse.

Purpose and Hypotheses

In the present study, we addressed gaps in the literature and seek to inform existing adolescent dating abuse theory by examining cyber and traditional dating abuse perpetration and victimization over the course of 1 year. Informed by social learning theory (Bandura 1977) and previous models of dating abuse (Riggs and O'Leary 1989), we examined whether dating abuse perpetration and victimization in one context (i.e., traditional) predicts cyber dating abuse perpetration and victimization over the following year, while controlling for demographic variables (i.e., gender, age, ethnicity, and parent education). We also examined whether cyber dating abuse perpetration and victimization is a continuous process predicting cyber dating abuse perpetration and victimization over the following year, while controlling for demographic variables. Based on theoretical and empirical evidence, we hypothesized that traditional and cyber dating abuse perpetration and victimization would be associated concurrently and over time.

Methods

Procedures and Participants

We used data from *Dating it Safe*, an ongoing 6-year longitudinal study of adolescent health. Participants included 1042 high school students recruited from seven public schools in southeast Texas (response rate = 62 %; higher than the generally accepted response rate of 60 % Brener et al. 2013; Johnson and Wislar 2012). Participants have been followed annually since spring of 2010. For this particular study, data are from Time 4 (spring 2013, retention rate: 75 % of those surveyed at baseline) and Time 5 (spring 2014, retention rate: 94 % of Time 4 participants), as cyber dating abuse was not assessed at earlier time points. Analyses were limited to adolescents who reported a history of dating (i.e., endorsed the item, "I have begun dating, going out with someone, or had a boyfriend/girlfriend").

When students were no longer attending the high schools from which they were originally recruited (e.g., graduated, dropped out, transferred schools), online surveys were used (Time 4: 25.7 %). By Time 5 all participants had graduated or were no longer attending their original high school, and nearly 70 % of the high school graduates were attending college or trade school at least part time. For participating in the surveys, students received a $10 gift card at Time 4 and a $20 gift card at Time 5. To increase reliability of adolescent self-report, teachers and other school administrators were not allowed to be present during questionnaire administration, and privacy was emphasized, including instructing participants

to not write their names on surveys and informing them that a federal certificate of confidentiality protected their responses. At Wave 4, the sample had a mean age of 18.09 (SD = .79), consisted of slightly more females (58 %) than males, and self-identified as African American (25.5 %), White (29.7 %), Hispanic (31.9 %), and other (12.8 %); and as heterosexual (90.5 %) and bisexual/homosexual (9.5 %). The study was approved by the first author's Institutional Review Board, and active parent consent and student assent/consent were obtained.

Measures

Cyber Abuse (Time 4 and 5)

Twenty-six items were modified and adapted from previous studies (Zweig et al. 2013; Picard 2007) to assess past year cyber dating abuse perpetration (13 items) and victimization (13 items). Participants reported whether they perpetrated (yes = 1, no = 0) cyber dating abuse against their current or most recent boyfriend/girlfriend (e.g., "I posted embarrassing photos or other images of him/her online"). The questions were repeated to assess victimization (e.g., "He/She posted embarrassing photos or others images of me online"). One item, "I sent him/her texts messages on his/her cell phone to check up on him/her (where are you, what are you doing, who are you with)" was removed from both the perpetration and victimization scales because of its potential to be misunderstood as normative; as demonstrated by how often they were endorsed [perpetration: 46.23 % (T4) and 50.39 % (T5), victimization: 52.63 % (T4) and 55.23 % (T5), respectively]. The 12 perpetration items were summed to create cyber dating abuse perpetration (range 0–12), while the 12 victimization items were summed to create cyber dating abuse victimization. Reliability for perpetration (Cronbach's α = .65 at Time 4, Cronbach's α = .67 at Time 5) and victimization (Cronbach's α = .74 at Time 4, Cronbach's α = .79 at Time 5) were acceptable.

Traditional Dating Abuse (Time 4)

The *Conflict in Adolescent Dating Relationships Inventory* (CADRI; Wolfe et al. 2001) was used to measure past year physical dating abuse perpetration and victimization (yes = 1, no = 0) with a current or most recent boyfriend/girlfriend. Example items included, "I kicked, hit or punched him/her;" "He/She kicked, hit or punched me"). Items were summed to create physical dating abuse perpetration (range 0–4) and victimization (range 0–4). Reliabilities for perpetration (Cronbach's α = .77) and victimization (Cronbach's α = .79) were acceptable.

The CADRI was also used to measure psychological dating abuse perpetration (10 items) and victimization (10 items). Using a yes (1)/no (0) format, example items included, "I insulted him/her with put-downs;" "He/She insulted me with put-downs." Items were summed to create psychological dating abuse perpetration (range 0–10) and victimization (range 0–10). Reliabilities for perpetration (Cronbach's α = .84) and victimization (Cronbach's α = .85) were acceptable.

Covariates

Gender (male = 0 vs. female = 1), ethnicity (3 dummy-coded variables: 1 = Hispanic, 0 = all other ethnicities; 1 = White, 0 = all other ethnicities; 1 = Black, 0 = all other ethnicities), highest parental education [1 = did not graduate from high school, n = 113 (15.9 %), 2 = finished high school or got GED, n = 122 (17.2 %), 3 = did some college or training after high school, n = 199 (28.1 %), 4 = finished college, n = 275 (38.8 %)], and age (equal to or above 18 = 1 vs. below 18 = 0) were included in the path model as control variables.

Analysis

We employed a path model with the maximum likelihood estimator with robust standard errors (MLR) using Mplus 7.3 (Muthén and Muthén 1998-2012) to examine whether traditional and cyber dating abuse in the previous year predicted cyber dating abuse perpetration and victimization over the following year. Because the dependent variables (cyber dating abuse perpetration and victimization) at Time 5 were positively skewed, MLR was used, which provides unbiased parameter estimations when data are not normally distributed (Yuan and Bentler 2000). Since we employed a fully saturated model examining all possible relationships, we do not report model fit indices, as they would always be perfect. Multiple imputation (MI) method with an inclusive strategy (Collins et al. 2001) was used to handle missingness, which gives unbiased and efficient parameter estimation (Enders 2001; Schafer and Graham 2002). After 40 datasets were imputed with SAS Proc MI (Graham et al. 2007), each dataset was analyzed and combined as a single set of averaged parameter estimates and standard errors (Schafer 1997) in Mplus with Type = imputation command (Muthén and Muthén 1998-2012).

Results

Applicable Mean, SD, and frequency for each variable are shown in Table 1. As shown in Table 2, traditional and cyber dating abuse were significantly correlated with one

Table 1 Means and standard deviations for psychological, physical and cyber dating abuse

Variables	Frequency (%)/mean/SD
Victimization	
Psychological abuse (T4, $n = 705$)	$M = 3.21$, SD $= 2.99$
None	193 (27.38 %)
One experience	88 (12.48 %)
Two different experiences	70 (9.93 %)
Three different experiences	64 (9.08 %)
Four different experiences	52 (7.38 %)
Five different experiences	55 (7.80 %)
Six different experiences	60 (8.51 %)
Seven different experiences	43 (6.10 %)
Eight different experiences	40 (5.67 %)
Nine or more different experiences	40 (5.67 %)
Physical abuse (T4, $n = 705$)	$M = 0.34$, SD $= 0.87$
None	586 (83.12 %)
One experience	52 (7.38 %)
Two different experiences	27 (3.83 %)
Three or more different experiences	40 (5.67 %)
Cyber abuse (T4, $n = 704$)	$M = 0.48$, SD $= 1.19$
None	535 (75.99 %)
One experience	101 (14.35 %)
Two different experiences	30 (4.26 %)
Three or more different experiences	38 (5.40 %)
Cyber abuse (T5, $n = 543$)	$M = 0.50$, SD $= 1.31$
None	422 (77.72 %)
One experience	73 (13.44 %)
Two different experiences	22 (4.05 %)
Three or more different experiences	26 (4.79 %)
Perpetration	
Psychological abuse (T4, $n = 705$)	$M = 3.04$, SD $= 2.86$
None	182 (25.82 %)
One experience	100 (14.18 %)
Two different experiences	82 (11.63 %)
Three different experiences	78 (11.06 %)
Four different experiences	53 (7.52 %)
Five different experiences	48 (6.81 %)
Six different experiences	53 (7.52 %)
Seven different experiences	45 (6.38 %)
Eight different experiences	28 (3.97 %)
Nine or more different experiences	36 (5.11 %)
Physical abuse (T4, $n = 705$)	$M = 0.30$, SD $= 0.81$
None	592 (83.97 %)
One experience	54 (7.66 %)
Two different experiences	34 (4.82 %)
Three or more different experiences	25 (3.55 %)
Cyber abuse (T4, $n = 704$)	$M = 0.29$, SD $= 0.83$
None	579 (82.24 %)
One experience	86 (12.22 %)

Table 1 continued

Variables	Frequency (%)/mean/SD
Two different experiences	17 (2.41 %)
Three or more different experiences	22 (3.12 %)
Cyber abuse (T5, $n = 543$)	$M = 0.32$, SD $= 0.90$
None	448 (82.50 %)
One different experience	65 (11.97 %)
Two different experiences	16 (2.95 %)
Three or more different experiences	14 (2.58 %)

SD standard deviation

Each variable's sample size differed because of missingness

another. As expected, cyber dating abuse victimization and perpetration were highly and positively correlated ($r = .55$ at baseline and $r = .53$ at 1-year follow-up, both $p < .001$).

Consistent with our hypothesis, the model including cyber dating abuse, traditional dating abuse (physical and psychological dating abuse), and demographic variables explained a significant amount of variance in cyber dating abuse perpetration at follow-up, $R^2 = .32$. As shown in Table 3, previous cyber dating abuse perpetration was associated with cyber dating abuse perpetration the following year, ($\beta = 0.52$, $SE = 0.07$, t value $= 7.81$, $p < .001$). No other variables were significantly correlated with cyber dating abuse perpetration over time.

The cyber dating abuse victimization model including cyber dating abuse, traditional dating abuse (physical and psychological dating abuse), and demographic variables explained a significant amount of variance in cyber dating abuse victimization at follow-up, $R^2 = .20$. In support of our hypothesis, previous cyber dating abuse perpetration ($\beta = 0.17$, $SE = 0.09$, t value $= 1.99$, $p < .05$) and victimization ($\beta = 0.20$, $SE = 0.09$, t value $= 2.28$, $p < .05$) were associated with cyber dating abuse victimization over the following year (see Table 3). Only physical dating abuse victimization at T4 ($\beta = 0.21$, $SE = 0.07$, t value $= 3.01$, $p < .01$) was positively related to cyber dating abuse victimization the following year after controlling for all previous cyber and traditional dating abuse and demographic variables; psychological dating abuse victimization at baseline was not related to cyber dating abuse victimization the following year.

Discussion

Although a growing body of literature has investigated adolescent dating abuse, scant research has considered the temporal relationship between traditional and cyber dating abuse in adolescents. To date, only cross-sectional data

Table 2 Correlations among dating abuse variables

	CDV (T5)	CDP (T5)	PSV (T4)	PSP (T4)	PHV (T4)	PHP (T4)	CDV (T4)	CDP (T4)
CDV (T5)	–							
CDP (T5)	0.53***	–						
PSV (T4)	0.19***	0.21***	–					
PSP (T4)	0.20***	0.26***	0.85***	–				
PHV (T4)	0.19***	0.22***	0.45***	0.38***	–			
PHP (T4)	0.11***	0.21***	0.36***	0.46***	0.56***	–		
CDV (T4)	0.26***	0.20***	0.47***	0.38***	0.43***	0.24***	–	
CDP (T4)	0.26***	0.41***	0.36***	0.45***	0.35***	0.36***	0.55***	–

CDV cyber dating abuse victimization, *CDP* cyber dating abuse perpetration, *PSV* psychological abuse victimization, *PSP* psychological dating abuse perpetration, *PHV* physical dating abuse victimization, *PHP* Physical dating abuse perpetration

*** $p < .001$

Table 3 The temporal relationship between traditional and cyber dating abuse

	Cyber perpetration (T5)			Cyber victimization (T5)		
	Estimation	SE	t	Estimation	SE	t
Female (=1 vs. male = 0)	0.04	0.03	1.22	0.06	0.04	1.56
Hispanic (=1 vs. others = 0)	0.05	0.06	0.83	0.06	0.06	0.89
White (=1 vs. others = 0)	0.04	0.06	0.69	0.06	0.06	0.83
Black (=1 vs. others = 0)	0.06	0.06	1.09	0.03	0.06	0.47
Age 18 ≥ 1 (=1 vs. below 18 = 0)	−0.06	0.04	−1.39	−0.04	0.05	−0.91
Offline survey (=1 vs. Online = 0)	0.01	0.05	0.16	0.00	0.05	0.04
Highest parental education	−0.01	0.04	−0.33	0.03	0.04	0.65
Psychological abuse victimization (T4)	−0.07	0.08	−0.84	−0.09	0.08	−1.07
Physical abuse victimization (T4)	0.11	0.06	1.82	0.21	0.07	3.01**
Cyber abuse victimization (T4)	−0.04	0.06	−0.59	0.20	0.09	2.28*
Psychological abuse perpetration (T4)	0.06	0.08	0.77	0.10	0.08	1.26
Physical abuse perpetration (T4)	−0.02	0.06	−0.34	−0.11	0.06	−1.70
Cyber abuse perpetration (T4)	0.52	0.07	7.81***	0.17	0.09	1.99*

* $p < .05$; ** $p < .01$; *** $p < .001$

exist to support a link between traditional and cyber dating abuse which, while important, does not provide insight into the development of cyber dating abuse over time. To address this gap in the literature and to better understand predictors of cyber dating abuse perpetration and victimization, we examined the relations between adolescents' traditional and cyber dating abuse over the course of 1 year. The primary aim of the present study was to determine whether traditional and cyber dating abuse perpetration and victimization in the previous year predicted cyber dating abuse perpetration and victimization the following year.
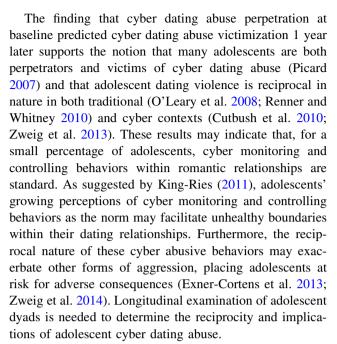
Consistent with previous literature (Cutbush et al. 2010; Hinduja and Patchin 2011), adolescents' traditional and cyber dating abuse perpetration were positively related concurrently and over time in the present study, as were traditional and cyber dating abuse victimization.

Specifically, bivariate correlations indicate that traditional dating abuse perpetration (i.e., psychological and physical) at the first time point was positively related to cyber dating abuse perpetration at the first time point and 1 year later. Additionally, traditional dating abuse victimization (i.e., psychological and physical) at the first time point was positively related to cyber dating abuse victimization at the first time point and 1 year later. Furthermore, cyber dating abuse perpetration and victimization were positively related at both assessment points, which supports the reciprocal nature of cyber dating abuse (Picard 2007; Zweig et al. 2013). In other words, adolescents victimized by cyber dating abuse are also likely to perpetrate cyber dating abuse, and those who perpetrate cyber dating abuse tend to be victimized by the same behaviors. Furthermore, experiences with cyber dating abuse tend to coincide with traditional dating abuse experiences.

Examination of the data longitudinally indicated that only cyber dating abuse perpetration at an earlier time point significantly predicted cyber dating abuse perpetration 1 year later after controlling for previous traditional physical and psychological abuse and important demographic variables. In contrast, both cyber dating abuse perpetration and victimization, as well as physical dating abuse victimization at one time point significantly predicted cyber dating abuse victimization 1 year later, while controlling for traditional psychological abuse and important demographic variables. Consistent with previous literature (Zweig et al. 2013), our results suggest that those who perpetrate cyber dating abuse are at risk for future cyber dating abuse victimization. These results support existing studies indicating that adolescent cyber dating abuse is reciprocal and therefore similar to traditional dating abuse (Hinduja and Patchin 2011; Zweig et al. 2013). Further, these findings suggest that those who are victimized in one context (e.g., face-to-face physical abuse) are at risk for victimization in another context (e.g., online, text messages, and cell phones), which may have implications for adolescent psychosocial adjustment. For example, exposure to violence in multiple contexts, such as home and school, has been found to relate to adolescents' internalizing and externalizing problems (Mrug et al. 2008). Future research should determine whether dating violence exposure in multiple contexts has cumulative effects on adolescents' psychological adjustment. Furthermore the near complete overlap between psychological and cyber abuse in the present study supports previous assertions that the internet, social media, and cell phones may be mechanisms by which adolescents experience psychological abuse (Zweig et al. 2013). Additional research may consider a more thorough examination as to whether cyber dating abuse is a distinct form of abuse, or if it is a vehicle to perpetrate all forms of abuse including psychological abuse.

Contrary to our hypotheses, psychological dating abuse victimization at the initial time point did not predict cyber dating abuse victimization 1 year later after controlling for demographic variables and measures of traditional physical and cyber dating abuse. As suggested by others (Korchmaros et al. 2013), cyber dating abuse may be a form of psychological dating abuse. Indeed, adolescents have reported that three of the four most common methods of psychological dating abuse are perpetrated via technology (Korchmaros et al. 2013). Furthermore, our measure of traditional psychological abuse did not distinguish between psychological abuse perpetrated via technology as opposed to face-to-face. Therefore, it is possible that cyber dating abuse better accounted for psychological dating abuse experienced by adolescents in our sample. Additional research is needed to explore this possibility.

The finding that cyber dating abuse perpetration at baseline predicted cyber dating abuse victimization 1 year later supports the notion that many adolescents are both perpetrators and victims of cyber dating abuse (Picard 2007) and that adolescent dating violence is reciprocal in nature in both traditional (O'Leary et al. 2008; Renner and Whitney 2010) and cyber contexts (Cutbush et al. 2010; Zweig et al. 2013). These results may indicate that, for a small percentage of adolescents, cyber monitoring and controlling behaviors within romantic relationships are standard. As suggested by King-Ries (2011), adolescents' growing perceptions of cyber monitoring and controlling behaviors as the norm may facilitate unhealthy boundaries within their dating relationships. Furthermore, the reciprocal nature of these cyber abusive behaviors may exacerbate other forms of aggression, placing adolescents at risk for adverse consequences (Exner-Cortens et al. 2013; Zweig et al. 2014). Longitudinal examination of adolescent dyads is needed to determine the reciprocity and implications of adolescent cyber dating abuse.

Our finding that physical dating abuse victimization at an earlier time point predicted cyber dating abuse victimization 1 year later provides additional support for the notion that cyber dating abuse often coincides with other forms of dating abuse (Hinduja and Patchin 2011; Zweig et al. 2013). As suggested by Korchmaros et al. (2013), adolescent dating abuse may be conceptualized along a continuum whereby cyber and traditional forms of dating abuse are experienced concurrently or at different time points throughout a dating relationship. Moreover, qualitative data indicated that adolescents fear face-to-face repercussions from a partner based on information obtained, or restricted, via technological devices (Barter et al. 2009). Our results provide direction for future research to examine whether cyber monitoring serves as a catalyst for face-to-face physical abuse within adolescents' dating relationships. Although the directions of causality remain obscure, it is important for parents, clinicians, and researchers to be aware that victims of cyber dating abuse may be experiencing other forms of dating abuse as well, including physical dating abuse.

Clinical Implications

The current findings extend our knowledge regarding adolescent dating abuse in both traditional and cyber contexts. These results have important implications for parents and clinicians. Specifically, cyber dating abuse may be an indication that other forms of dating abuse are present. Inquiring about adolescents' online behaviors could provide some insight into other relationship behaviors. Prevention efforts should focus on helping adolescents understand healthy and unhealthy relationship behaviors as

they relate to face-to-face and technological interactions. Specifically, some teens understand cyber monitoring and controlling as motivated by a partner's love and concern (Barter et al. 2009; Draucker and Martsolf 2010). Informing adolescents of the risks of both perpetrating and being victimized by cyber dating abuse may deter the cycle of violence. Open discussions between professionals, parents, and adolescents regarding safe online and offline activity within their romantic relationships could deter teens from perceiving abusive behaviors as normal and minimize the extent to which cyber abusive behaviors are concealed. Finally, results of this study highlight the need for intervention efforts to focus on abuse in adolescent relationships occurring in both cyber and traditional realms. As cyber dating abuse may be displayed publicly (e.g., on a social networking site), peer interventions and bystander methods is one potential avenue of exploration.

Limitations

The present study should be interpreted in light of several limitations. First, our data were limited to self-report, retrospective measures completed by high school students in southeast Texas. Our results may not be generalizable to middle-school-aged adolescents and teens from other regions of the US. However, the prevalence of adolescent traditional and cyber dating abuse perpetration and victimization reported in the present study was consistent with existing research (Stonard et al. 2014; Zweig et al. 2013). Second, we did not assess cyber dating abuse at earlier time points and therefore the process by which cyber and traditional dating abuse develops remains unclear. Future research should investigate whether individuals in abusive relationships begin to exercise cyber forms of monitoring and control prior to engaging in physical violence, or if cyber monitoring and control serve as catalysts for face-to-face aggression (Draucker and Martsolf 2010). Understanding the development of cyber dating abuse would be informed by examination of other predictors of traditional dating violence, such as substance use (Temple et al. 2013), personality characteristics (Reuter et al. 2015), and attitudes towards violence (Temple et al. 2013). Third, we did not examine whether adolescents were with the same or different partner, nor did we examine adolescent couple dyads or distinguish between offensive and defensive forms of perpetration, which prevented inferences regarding the reciprocal nature of abuse. Therefore, motivations for cyber dating abuse cannot be inferred. Finally, additional research is needed to assess the effects of traditional versus cyber dating abuse to better understand if one is more detrimental than the other, or if abuse experienced in both realms creates higher risk for adverse consequences.

Conclusions

This is the first study to longitudinally explore the link between traditional and cyber dating abuse among teens. Our results indicate that traditional and cyber abuse were positively associated, and cyber abuse perpetration and victimization were correlated at each time point. Cyber abuse perpetration continued to predict cyber abuse perpetration 1 year later, while controlling for traditional abuse and demographic variables. Furthermore, adolescents victimized by physical and cyber abuse, as well as those perpetrating cyber abuse, were at increased risk of cyber abuse victimization the following year. Our findings contribute to the adolescent dating violence literature by considering predictors of cyber dating abuse as well as the overlap between traditional and cyber forms of dating abuse. We also provide direction for future research to examine the development of adolescent dating abuse. These findings may inform intervention efforts tailored to teens experiencing dating abuse. Parents, professionals, and teens should consider the influence of technology in discussions of adolescent romantic relationships.

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