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ORIGINAL PAPER

The Association Between Exposure to Violent Pornography and Teen Dating Violence in Grade 10 High School Students

Whitney L. Rostad[1] · Daniel Gittins-Stone[2] · Charlie Huntington[3,4] · Christie J. Rizzo[2] · Deborah Pearlman[5] · Lindsay Orchowski[3,6]

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Abstract

Exposure to pornography in general has been linked with adolescent dating violence and sexual aggression, but less is known about exposure to violent pornography specifically. The current study examined the association of violent pornography exposure with different forms of teen dating violence (TDV) using baseline survey data from a sample of Grade 10 high school students who reported being in a dating relationship in the past year ($n = 1694$). Gender-stratified logistic regression models generated odds ratios adjusted for demographics, substance use, history of suspension/expulsion, gender equitable attitudes, and tolerance of rape myths to identify significant associations between violent pornography exposure and self-reported physical, sexual, and threatening TDV perpetration and victimization. Violent pornography exposure was associated with all types of TDV, though patterns differed by gender. Boys exposed to violent pornography were 2–3 times more likely to report sexual TDV perpetration and victimization and physical TDV victimization, while girls exposed to violent pornography were over 1.5 times more likely to be perpetrate threatening TDV compared to their non-exposed counterparts. Comprehensive prevention strategies for TDV may consider the potential risks associated with exposure to violent pornography, particularly for boys, and provide an alternative source of education about healthy sexual behavior and relationships.

Keywords Teen dating violence · Pornography · Risk factors · Violence prevention

Introduction

Teen dating violence (TDV) is a significant public health problem among adolescents in the U.S. (Kann et al., 2016). In 2015, among U.S. high school students who dated during the past year, 9.6% experienced physical TDV victimization (hit, slammed into something, or injured with object/weapon) and 10.6% experienced sexual TDV (being kissed, touched, or physically forced to have sexual intercourse) (Kann et al., 2016). Males have been found to perpetrate more sexual TDV than females, while females perpetrate more physical and psychological TDV, though many are both perpetrators and victims and involved in multiple forms of TDV over time (Ybarra, Espelage, Langhinrichsen-Rohling, Korchmaros, & Boyd, 2016). Indeed, mutual TDV is prevalent in adolescent relationships, which has been documented in multiple studies (Haynie et al., 2013; O'Leary & Smith Slep, 2003; Swahn, Alemdar, & Whitaker, 2010). Accordingly, identifying modifiable risk factors for TDV is critical to informing prevention efforts. One potential risk factor receiving increased attention in the literature is exposure to pornography.

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

✉ Whitney L. Rostad
wrostad@gmail.com

[1] Division of Violence Prevention, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention, Atlanta, GA 30341, USA

[2] Bouvé College of Health Sciences, Northeastern University, Boston, MA, USA

[3] Department of Psychiatry, Rhode Island Hospital, Providence, RI, USA

[4] Department of Psychology, University of Denver, Denver, CO, USA

[5] Department of Epidemiology, Brown University, Providence, RI, USA

[6] Department of Psychiatry and Human Behavior, Alpert Medical School of Brown University, Providence, RI, USA

With the proliferation of the Internet and other forms of media, adolescents have easy access to a large collection of sexually explicit material. Indeed, a considerable portion of adolescents are exposed to pornography (Peter & Valkenburg, 2016), and more frequent pornography viewing has been associated with acts of sexual aggression and adolescent dating violence (Rothman & Adhia, 2016; Wright, Tokunaga, & Kraus, 2016). A recent study found that over half (51%) of a racially diverse sample of adolescents had ever been asked to view pornography with a dating or sexual partner and 44% had ever been asked to act out something their partner viewed in pornography (Rothman & Adhia, 2016). This is concerning given that some studies suggest that a large portion of pornography is aggressive (Bridges, Wosnitzer, Scharrer, Sun, & Liberman, 2010; Dekeseredy, 2015), and research has demonstrated that adolescents who intentionally viewed violent pornography were almost six times more likely to report sexually aggressive behavior than those who had not (Ybarra, Mitchell, Hamburger, Diener-West, & Leaf, 2011).

It should be noted that although pornography has become more available in recent years due to the proliferation of Internet sources (D'Amato, 2006), some research has found that the presence of aggressive pornography in particular is not increasing (Shor & Seida, 2019). Further, some defendants of pornography suggest that pornography may provide a sort of catharsis for individuals with a predisposition for sexual violence and aggression in general, and may reduce their risk of perpetration (Ferguson & Hartley, 2009). This is somewhat supported by the decrease in rape incidence over the past few decades, despite increased availability of pornography (D'Amato, 2006). However, there is general agreement that any potential benefits of pornography are likely limited to content that is not violent or degrading, and research has yet to determine how pornography exposure may link to adolescent risk behavior (Lim, Carrotte, & Hellard, 2016; Watson & Smith, 2012).

As pornography has become increasingly available and content with aggressive themes are readily accessible, concerns have grown about its impact on health and well-being, particularly among young users (Lim et al., 2016). For example, there are concerns that exposure to sexually explicit material with violent themes may not be perceived as fantasy, particularly among those with limited sexual experience, which could potentially have negative impacts on behavior and expectations for sexual interactions and relationships in real life. Further, some worry that violent pornography may engender negative attitudes toward women and promote risky sexual behavior and violence against women (Ferguson & Hartley, 2009).

In light of these concerns, two theoretical frameworks are particularly relevant. The first is the confluence model of sexual aggression, which considers exposure to pornography in the context of other potential risk factors that predispose some individuals to aggression (Malamuth, Addison, & Koss, 2000). The confluence model suggests that for boys and men who are high in both hostile masculinity (e.g., domineering attitude toward women) and sexual promiscuity (i.e., engaging in impersonal sex acts), pornography consumption may intensify the risk of sexual violence. Indeed, in a study of male adults, a significant association between pornography use and sexual coercion was detected among males high in both hostile masculinity and sexual promiscuity; they also consumed more violent sexual content than those low on both dimensions (Baer, Kohut, & Fisher, 2015).

The second framework is Wright's (2011) script acquisition, activation, application model ($_3$AM) of sexual media socialization, which proposes that pornography influences behavior through scripts acquired by viewing sexual media. These sexual scripts are then activated and applied when portrayals of sexual roles and behaviors are perceived as normative, acceptable, and gratifying. In the context of violent pornography (i.e., degrading and/or aggressive toward female actors), the more individuals are exposed to aggressive and degrading depictions of sexuality, the more likely that these types of scripts are activated and utilized in dating and sexual relationships. Consistent with $_3$AM, in a study of college-aged heterosexual men, those who had greater exposure to media that objectified women had attitudes that were more supportive of violence against women (Wright et al., 2016). Collectively, these frameworks highlight the importance of studying exposure to violent pornography in the context of attitudinal and behavioral risk factors when examining real-life interpersonal violence in adolescent relationships, and exploring whether associations are indeed stronger for boys.

Among adolescents, several investigations document associations between exposure to pornography and other sexually explicit media and TDV. In cross-sectional studies, adolescents who watch pornography with a partner were more likely to experience TDV (Rothman & Adhia, 2016) and a recent literature review found that youth exposed to sexually violent media report attitudes accepting of TDV and sexual violence, particularly boys (Rodenhizer & Edwards, 2017). Further, a longitudinal study demonstrated an association between exposure to sexually explicit media and sexual harassment perpetration two years later, but only among male adolescent participants (Brown & L'Engle, 2009). Volition may also matter; for instance, individuals who force their dating partners to watch violent pornography may possess a particular propensity for aggression (Baer et al., 2015).

Gender differences have been observed in the likelihood of exposure to different types of pornography. Current substance use has been found to increase the likelihood of exposure among adolescent boys, while a history of family violence was associated with exposure for adolescent girls (Romito & Beltramini, 2015). Moreover, in a convenience sample of college students reporting retrospectively on their exposure to online pornography before the age of 18, boys reported

viewing pornography at an earlier age than girls, exposure to more extreme images (e.g., rape, child pornography), and viewing pornography more often, while girls reported more involuntary exposure to pornography (Sabina, Wolak, & Finkelhor, 2008). Further, although a considerable portion of participants reported exposure to pornography depicting rape or sexual violence at least once before age 18, significantly more boys reported exposure than girls.

While research demonstrates relationships between pornography in general and sexual behavior and TDV (Rothman & Adhia, 2016; Ybarra et al., 2011), as well as violent pornography and sexual aggression specifically (Ybarra et al., 2011), less is known about the relationship between exposure to violent pornography and different forms of TDV, and whether these relationships vary according to gender. Given noted gender differences in viewing and exposure to pornography (Brown & L'Engle, 2009; Rodenhizer & Edwards, 2017), the relationship between violent pornography and TDV may be different for girls than boys although some studies find that viewing pornography has become a normative experience for adolescents (Sabina et al., 2008). Further, substance use, association with deviant peers, and attitudes permissive of rape myths and traditional gender roles have consistently been linked to TDV (Foshee, Linder, MacDougall, & Bangdiwala, 2001; Reyes & Foshee, 2013; Rothman, Johnson, Azrael, Hall, & Weinberg, 2010; Rothman, McNaughton Reyes, Johnson, & LaValley, 2012; Rothman et al., 2012; Temple, Shorey, Fite, Stuart, & Le, 2013), yet little research to date has examined the unique relationship between violent pornography and interpersonal violence among youth, after controlling for known risk factors (Ferguson & Hartley, 2009; Lim et al., 2016; Watson & Smith, 2012).

The current study sought to help fill this gap by investigating the influence of exposure to violent pornography (i.e., degrading and/or aggressive toward female actors) in videos, magazines, and books on various forms of TDV (e.g., threatening, physical, and sexual), and potential gender-related differences, among a sample of high school students. We hypothesized that exposure to violent pornography would be significantly related to TDV victimization and perpetration, independent of potential demographic predictors (i.e., age, socioeconomic status), attitudes (i.e., masculine ideology and acceptance of rape myths), and co-occurring risk behaviors (i.e., recent substance use, previous suspension/expulsion). Based on the prior literature demonstrating different developmental pathways to TDV for males versus females (Rothman et al., 2012), we explored the relationship between pornography and TDV separately for male and female students. Given prior studies linking exposure to sexually explicit media with sexual harassment for boys (Brown & L'Engle, 2009; Rodenhizer & Edwards, 2017), we also hypothesized that patterns of associations would be different for male and female students.

Method

Participants and Procedure

Data were from a baseline survey administered in a randomized clinical trial of a school-based sexual assault prevention program for high school youth. Participants were 2830 Grade 10 students drawn from 27 high schools in Rhode Island and Massachusetts. Parents and guardians were informed about the study through mailings from the school and could opt their child out of the study; adolescents provided assent prior to survey completion. A total of 82 parents opted their child out of the study; there is no record of the number of students who did not provide their assent. Adolescents typically completed surveys during their health class period on mini-laptops equipped with DatSTAT software or a pencil and paper survey. This study was approved by the hospital-based IRB. A Certificate of Confidentiality was obtained from the Centers for Disease Control and Prevention.

Measures

Demographics

Participants provided information regarding their age, gender, and eligibility for free or reduced-price lunch. Participants also reported whether they had a dating relationship in the past year (yes/no).

Dating Violence

The Conflict in Adolescent Dating Relationships Inventory (CADRI) (Wolfe et al., 2001) was administered to assess three types of dating abuse perpetration and victimization over the past year: threatening (three items for each perpetration and victimization), physical (four items for each), and sexual (four items for each). Example items of perpetration and victimization, respectively, included "I threatened to hurt him/her" and "He/she threatened to hurt me" (threatening); "I pushed, shoved, or shook him/her" and "He/she pushed, shoved, or shook me" (physical), and "I forced him/her to have sex when he/she didn't want to" and He/she forced me to have sex when I didn't want to" (sexual). Response options included "Never," "Seldom," "Sometimes," and "Often." Summed scores were computed for each of the separate subscales. The CADRI has shown adequate internal consistency across several studies (Wolfe et al., 2001) and was adequate in the current sample (reliabilities ranged from .65 for sexual TDV perpetration to .85 for physical TDV victimization).

School Misconduct

Participants were asked if they had ever been suspended or expelled from school.

Rape Myth Acceptance

Participants completed the Illinois Rape Myth Acceptance Scale (IRMAS) (Payne, Lonsway, & Fitzgerald, 1999) to indicate the extent to which they tolerate rape myths.

Participants indicated their agreement to statements such as "Sexual assault charges are often used as a way of getting back at guys" using a 7-point scale ranging from "Strongly Disagree" to "Strongly Agree." The mean of seven items was calculated, with higher score representing higher endorsement of rape myths. The scale had good internal reliability ($\alpha = .82$).

Gender Equitable Attitudes

Attitudes about masculine norms and gender equity were measured with 12 items modified from Barker's Gender Equitable Norms Scale (Pulerwitz & Barker, 2008), previously used by Miller et al. (2012). Participants responded along a 4-point scale how much they agreed with statements such as "In a good dating relationship, the guy gets his way most of the time" and "A guy never needs to hit another guy to get respect." A mean was computed from the 12 items, with higher scores indicating more gender equitable attitudes (i.e., less rigid attitudes about masculinity). Internal reliability was calculated at .77.

Substance Use

Two items assessed on how many days subjects had used marijuana or had a heavy drinking episode (more than four and five drinks in a row for females and males, respectively) in the past 30 days. Questions were adapted from the CDC's Youth Risk Behavior Survey. Response options included: never drank alcohol; 0 days; 1–2 days; 3–9 days; 10–19 days; or 20–31 days. Because participants were adolescents, heavy alcohol and marijuana use responses were each dichotomized (1 = past 30-day use; 0 = no past 30-day use).

Violent Pornography Exposure

Three items from the Social Norms Measure (Boeringer, Shehan, & Akers, 1991) assessed consumption of violent sexually explicit media. Participants indicated the number of times they had ever consumed magazines, videos or films, or written books depicting a female or females being forced to engage in sexual acts. Response options ranged from 0 ("Never") to 4 ("More than 20 times.") Responses across different types of exposure were aggregated to produce a sum of overall exposure to violent pornography. Internal reliability was calculated at .64, which may be somewhat lower because of restricted variability and/or because adolescents may only be exposed to pornography through one type of medium (e.g., video exposure only).

Statistical Approach

Data for the outcome of interest, TDV, as well as demographics and potential predictors such as rape myth acceptance, masculine ideology, and delinquent behaviors were included in analyses. Analyses were limited to participants who identified as male or female and reported having a dating partner during the past year ($n = 1694$). An examination of scale distributions revealed zero-inflation (i.e., frequent scores of 0) for the CADRI, IRMAS, and pornography exposure aggregate scale. A log transformation was applied to the IRMAS, which yielded a more normal distribution, and thus, transformed scores were used in modeling. Because a preponderance of the adolescent participants reported no TDV perpetration or victimization and had never been exposed to violent pornography, aggregate scores for these scales were dichotomized (0 = absent; 1 = present). Chi-square tests were conducted to explore gender differences on TDV subscales.

Gender-stratified logistic regression modeling accounting for school cluster ($n = 27$) generated adjusted odds ratios to examine the relationship between pornography exposure and physical, sexual, or threatening TDV while controlling for demographics and attitudinal and behavioral risk factors. In addition to exposure to violent pornography, the following covariates were included in the model: age, past suspension/expulsion, past 30-day heavy drinking, past 30-day marijuana use, rape myth acceptance, and endorsement of masculine norms. Missing data for all CADRI subscales were less than 1%, while the percentage of missing data for covariates ranged from 5.8% (IRMAS) to 17.4% (suspension/expulsion). Using the Missing Value Analysis procedure in SPSS (IBM Corp., 2017), we found evidence that data were missing at random, and thus, data were modeled under the assumption of missing-at-random. Analyses were conducted in *Mplus* version 8.0, which uses full information maximum likelihood (i.e., all available information) to estimate model parameters (Muthén & Muthén, 1998–2017). Further, to address any non-normality in indicators, a maximum likelihood estimator with robust standard errors was used.

Results

Preliminary Analyses

Of the 2830 Grade 10 students who completed the baseline survey, 62.4% ($n = 1766$) indicated they had been involved in

a dating relationship in the past year. Of this sample, 52.3% identified as female and 43.6% as male; all others identified as transgender or did not provide information. Participants were on average 15.42 years old (SD .65). Due to school privacy concerns, it was not possible to survey participant race or ethnicity. However, based on publically available data reporting the percent racial or ethnic minority student enrollment within each school, approximately 31% of the students across study sites were a racial/ethnic minority student.

Of the 1694 male and female dating teens that responded, 23.8% reported a history of suspension or expulsion, and 18.9% reported marijuana use and 14.4% reported heavy alcohol use in the past 30 days (see Table 1). In the current sample, 15.5% reported experiencing physical TDV victimization and 14.8% reported perpetration; 15.7% reported sexual TDV victimization and 7.8% reported perpetration; and 18.6% reported threatening TDV victimization and 11.4% reported perpetration. Of those who responded, 21.9% reported being exposed to some form of violent pornography. Male students (29.2%) were more likely to report any exposure to violent pornography than females (16.0%). Compared to male students, female students were more likely to perpetrate physical TDV (20.2 vs. 8.3%) and threatening TDV (13.9 vs. 8.4%), and were more likely to be victims of physical TDV (17.1 vs. 13.6%), sexual TDV (21.7 vs. 8.5%), and threatening TDV (21.5 vs. 15.2%). Many participants were both victims and perpetrators: 70.2% of victims of physical TDV were also perpetrators, while 73.6% of perpetrators were also victims; 46.0% of victims of threatening TDV were also perpetrators and 75.1% of perpetrators were also victims; and 39.6% of victims of sexual TDV were also perpetrators and 80.2% of perpetrators were also victims. Not surprisingly, victimization and perpetration across all TDV categories were highly correlated ($r = .52–.69$) (see Table 2), consistent with the literature indicating that TDV victimization and perpetration frequently co-occur during adolescence (O'Leary & Smith Slep, 2003; Swahn et al., 2010; Williams, Connolly, Pepler, Craig, & Laporte, 2008).

Logistic Regression Analyses

Physical TDV

Among female participants, a history of suspension/expulsion (AOR = 2.02; 95% CI 1.22–3.36), heavy drinking (AOR = 2.11; 95% CI 1.39–3.20), and marijuana use (AOR = 1.92; 95% CI 1.22–3.03) were significantly associated with physical TDV perpetration, while only marijuana use (AOR = 2.20; 95% CI 1.38–3.50) was associated with victimization after controlling for age, rape myth acceptance, and gender equitable attitudes (see Table 3). Exposure to violent pornography (AOR == 1.81 05% CI = .96–3.41) was also a marginally significant predictor of perpetration, with increasing exposure related to greater odds of physical TDV perpetration.

Among male students, only gender equitable attitudes (AOR = 0.28; 95% CI .13–.60) were significantly associated with physical TDV perpetration, as male participants with more equitable attitudes were less likely to perpetrate physical TDV. With regard to victimization, gender equitable

Table 1 Sample characteristics in total and by participant gender ($N = 1694$)

Characteristics	*n*	Total	Female ($n = 924$)[a]	Male ($n = 770$)[a]	p[b]
Demographic characteristics					
Age (SD)	1690	15.41 (0.59)	15.35 (0.53)	15.48 (0.65)	< .01
Free or reduced-price lunch (%)	1393	523 (37.5)	282 (36.2)	241 (39.3)	.22
Behavioral characteristics (%)					
Pornography exposure	1591	349 (21.9)	140 (16.0)	209 (29.2)	< .01
Suspension/expulsion	1400	333 (23.8)	128 (16.4)	205 (33.2)	< .01
Heavy drinking	1676	241 (14.4)	146 (16.0)	95 (12.5)	.04
Marijuana use	1675	316 (18.9)	188 (20.6)	128 (16.8)	.05
Attitudinal factors (SD)					
Rape myth acceptance	1596	.55 (.48)	.45 (.43)	.68 (.51)	< .01
Gender equitable attitudes	1588	2.24 (.46)	2.42 (.38)	2.02 (.45)	< .01
Dating violence (%)					
Physical TDV perpetration	1689	250 (14.8)	186 (20.2)	64 (8.3)	< .01
Physical TDV victimization	1688	262 (15.5)	158 (17.1)	104 (13.6)	.04
Sexual TDV perpetration	1685	131 (7.8)	70 (7.6)	61 (8.0)	.78
Sexual TDV victimization	1683	265 (15.7)	200 (21.7)	65 (8.5)	< .01
Threatening TDV perpetration	1693	193 (11.4)	128 (13.9)	65 (8.4)	< .01
Threatening TDV victimization	1692	315 (18.6)	198 (21.5)	117 (15.2)	< .01

[a]Denominator for percentages only includes participants who responded to item(s) for a given variable

[b]Chi-square tests for categorical variables and independent samples *t* tests for continuous variables

Table 2 Correlation matrix

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. Porn use	–											
2. Threatening victimization	.04	–										
3. Threatening perpetration	.05	**.52**	–									
4. Physical abuse victimization	**.08**	**.49**	**.40**	–								
5. Physical abuse perpetration	**.05**	**.37**	**.45**	**.67**	–							
6. Sexual abuse victimization	**.06**	**.37**	**.26**	**.32**	**.29**	–						
7. Sexual abuse perpetration	**.08**	**.20**	**.26**	**.26**	**.25**	**.51**	–					
8. Alcohol use[a]	**.07**	**.17**	**.16**	**.18**	**.19**	**.15**	**.09**	–				
9. Marijuana use[b]	**.09**	**.18**	**.18**	**.18**	**.18**	**.18**	**.13**	**.50**	–			
10. Gender equitable attitudes	**−.08**	.01	**−.07**	−.04	−.04	**.05**	**−.06**	**−.07**	−.05	–		
11. Rape myth acceptance	**.15**	−.02	.03	**.08**	**.05**	−.01	**.07**	.04	.04	**−.43**	–	
12. School misconduct[c]	.02	**.10**	**.18**	**.09**	**.07**	.01	**.09**	**.13**	**.24**	**−.22**	**.10**	–
13. Age	−.03	**.10**	**.07**	.04	.01	.00	−.01	**.06**	**.09**	−.05	.03	**.08**

*Significant correlations ($p < .05$) are indicated in bold

[a]Alcohol use: 0 = *no use*, 1 = *use*. [b]Marijuana use: 0 = *no use*, 1 = *use*. [c]School misconduct: 0 = no misconduct, 1 = some misconduct

Table 3 Logistic regression models

Physical dating violence						
	Female ($n = 748$)			Male ($n = 579$)		
	AOR	95% CI	*p*	AOR	95% CI	*p*
Perpetration						
Age	0.83	.56–1.22	.34	1.19	.71–2.00	.51
Suspension/expulsion[a]	2.02	1.22–3.36	.01	0.91	.48–1.72	.77
Heavy drinking[b]	2.10	1.39–3.20	< .01	1.21	.44–3.37	.71
Marijuana use[c]	1.95	1.24–3.08	< .01	1.74	.85–3.56	.13
Rape myth acceptance	1.22	.74–2.01	.43	1.36	.65–2.85	.41
Gender equitable attitudes	0.65	.30–1.44	.28	0.28	.13–.60	< .01
Pornography exposure[d]	1.81	.96–3.41	.07	1.57	.81–3.04	.18
Victimization						
Age	1.07	.71–1.60	.75	1.27	.88–1.83	.20
Suspension/expulsion[a]	1.34	.86–2.07	.19	1.35	.90–2.03	.14
Heavy drinking[b]	1.70	.95–3.07	.08	1.57	.71–3.51	.27
Marijuana use[c]	2.19	1.37–3.50	< .01	1.53	.66–3.52	.32
Rape myth acceptance	1.32	.89–1.94	.17	1.47	1.01–2.15	.04
Gender equitable attitudes	0.86	.50–1.49	.60	0.58	.35–.95	.03
Pornography exposure[d]	1.15	.57–2.33	.70	2.31	1.30–4.10	.01

[a] Absence of suspension or expulsion is reference category

[b] No past 30-day heavy drinking is reference category

[c] No past 30-day marijuana use is reference category

[d] No reported pornography exposure is the reference category

attitudes (AOR = 0.58; 95% CI .35–.95), rape myth acceptance (AOR = 1.47; 95% CI 1.01–2.15), and violent pornography exposure (AOR = 2.31; 95% CI 1.30–4.10) were significantly associated with greater odds of physical TDV victimization after controlling for age, a history of suspension/expulsion, and heavy alcohol and marijuana use (see Table 2).

Sexual TDV

For female students, none of the variables were significantly related to sexual TDV perpetration. However, for sexual TDV victimization, marijuana use (AOR = 2.48; 95% CI 1.64–3.75) was significantly associated with greater odds of sexual TDV

after controlling for age, suspension/expulsion, heavy drinking, rape myth acceptance, and gender equitable attitudes (see Table 4). Exposure to violent pornography (AOR = 1.63; 95% CI .96–2.76) was marginally significant; specifically, female participants who had been exposed to violent pornography were more likely to experience sexual TDV victimization.

Among male participants, exposure to violent pornography (AOR = 3.34; 95% CI 1.85–6.04) and marijuana use (AOR = 3.01; 95% CI 1.36–6.67) were significantly associated with greater odds of sexual TDV perpetration after controlling for age, a history of suspension/expulsion, heavy alcohol use, rape myth acceptance, and gender equitable attitudes. Violent pornography exposure (AOR = 2.60; 95% CI 1.40–4.83) and marijuana use (AOR = 3.28; 95% CI 1.82–5.89) were also significantly associated with greater odds of sexual TDV victimization for male participants. Male participants who reported exposure to violent pornography and marijuana use were more likely to perpetrate and be victims of sexual TDV.

Threatening TDV

Among female participants, a history of suspension or expulsion (AOR = 3.34; 95% CI 2.06–5.43), marijuana use (AOR = 1.59; 95% CI 1.01–2.51), and violent pornography exposure (AOR = 1.77; 95% CI 1.05–2.97) were significantly related to threatening TDV perpetration after controlling for covariates (see Table 5). With regard to threatening TDV victimization, heavy alcohol use (AOR = 2.05; 95% CI 1.32–3.19), marijuana use (AOR = 1.90; 95% CI 1.27–2.83), and rape myth acceptance (AOR = 0.64; 95% CI .46–.89) were statistically significant after controlling for age, a history of suspension/expulsion, and gender attitudes. Exposure to violent pornography was not significantly related to victimization for female participants.

For threatening TDV perpetration among male participants, age (AOR = 1.75; 95% CI 1.02–3.00), a history of suspension/expulsion (AOR = 2.00; 95% CI 1.14–3.51), marijuana use (AOR = 2.85; 95% CI 1.41–5.73), and gender equitable attitudes (AOR = 0.28; 95% CI .12–.68) were statistically significant after controlling for heavy alcohol use, rape myth acceptance, and pornography exposure. Only age (AOR = 1.70; 95% CI 1.22–2.37) and a history of suspension/expulsion (AOR = 1.69; 95% CI 1.16–2.46) were related to threatening TDV victimization among male participants. Exposure to violent pornography was not significantly related to male participants' experiences of threatening TDV victimization or perpetration.

Discussion

TDV is a prevalent and significant public health concern (Kann et al., 2016). Accordingly, it is critical to identify risk factors for TDV, one of which is the emerging issue

Table 4 Logistic regression models

Sexual dating violence						
	Female ($n = 746$)			Male ($n = 578$)		
	AOR	95% CI	p	AOR	95% CI	p
Perpetration						
Age	0.83	.48–1.44	.51	0.90	.44–1.87	.79
Suspension/expulsion[a]	1.31	.65–2.67	.45	1.67	.81–3.45	.16
Heavy drinking[b]	1.44	.46–4.51	.53	0.78	.31–1.92	.58
Marijuana use[c]	1.75	.88–3.47	.11	3.01	1.36–6.67	.01
Rape myth acceptance	1.43	.73–2.83	.30	1.10	.38–3.19	.87
Gender equitable attitudes	0.90	.45–1.78	.76	0.82	.33–2.01	.66
Pornography exposure[d]	0.99	.39–2.55	.99	3.34	1.85–6.04	< .01
Victimization						
Age	0.76	.52–1.11	.15	1.22	.72–2.05	.46
Suspension/expulsion[a]	0.60	.36–1.01	.06	1.52	.85–2.72	.16
Heavy drinking[b]	1.82	.83–3.97	.13	0.54	.23–1.23	.14
Marijuana use[c]	2.52	1.66–3.83	< .01	3.28	1.82–5.89	< .01
Rape myth acceptance	1.23	.76–2.00	.40	.89	.43–1.82	.75
Gender equitable attitudes	1.19	.72–1.95	.50	.70	.32–1.52	.36
Pornography exposure[d]	1.63	.96–2.76	.07	2.60	1.40–4.83	< .01

[a]Absence of suspension or expulsion is reference category

[b]No past 30-day heavy drinking is reference category

[c]No past 30-day marijuana use is reference category

[d]No reported pornography exposure is the reference category

Table 5 Logistic regression models

Threatening dating violence						
	Female ($n=750$)			Male ($n=581$)		
	AOR	95% CI	*p*	AOR	95% CI	*p*
Perpetration						
Age	1.23	.85–1.79	.27	1.75	1.02–3.00	.04
Suspension/expulsion[a]	3.34	2.06–5.43	< .01	2.00	1.14–3.51	.02
Heavy drinking[b]	1.56	.90–2.69	.12	0.90	.34–2.39	.83
Marijuana use[c]	1.59	1.01–2.51	.05	2.85	1.41–5.73	< .01
Rape myth acceptance	0.87	.47–1.63	.67	0.86	.45–1.63	.65
Gender equitable attitudes	0.58	.26–1.26	.16	0.28	.12–.68	< .01
Pornography exposure[d]	1.77	1.05–2.97	.03	1.39	.73–2.65	.32
Victimization						
Age	1.37	.98–1.91	.07	1.70	1.22–2.37	< .01
Suspension/expulsion[a]	1.44	.89–2.33	.14	1.69	1.16–2.46	.01
Heavy drinking[b]	2.05	1.32–3.19	< .01	1.09	.44–2.69	.85
Marijuana use[c]	1.90	1.27–2.83	< .01	1.35	.69–2.62	.38
Rape myth acceptance	0.64	.46–.89	.01	1.09	.76–1.55	.65
Gender equitable attitudes	1.14	.79–1.64	.48	0.73	.41–1.30	.29
Pornography exposure[d]	1.29	.78–2.12	.32	1.34	.72–2.50	.35

[a]Absence of suspension or expulsion is reference category

[b]No past 30-day heavy drinking is reference category

[c]No past 30-day marijuana use is reference category

[d]No reported pornography exposure is the reference category

of adolescents' increased access and exposure to sexually explicit content that is violent and degrading (Ybarra et al., 2011). Our hypothesis that exposure to violent pornography (i.e., depicting females forced to engage in sexual acts) would be significantly related to all forms of TDV among adolescents involved in a dating relationship was mostly supported, though patterns differed according to gender. Female adolescents exposed to violent pornography were over 1.5 times as likely to perpetrate physical and threatening TDV, whereas male adolescents who were exposed were over 3 times as likely to perpetrate sexual TDV. Interestingly, exposure to violent pornography was only marginally related to sexual TDV victimization for female participants, but male participants who were exposed to violent pornography were over two times as likely to experience physical and sexual TDV victimization than their male counterparts. These associations were significant after controlling for known demographic, attitudinal, and behavioral risk factors, such as substance use, history of suspension/expulsion, rigid attitudes about masculinity and gender, and tolerance of rape myths. Collectively, our findings suggest that exposure to violent pornography may be a significant correlate of all types of TDV perpetration and victimization, particularly for male adolescents.

Our findings may be considered in the context of previous research demonstrating greater exposure to pornography and images depicting sexual violence among boys before 18 years old (Sabina et al., 2008), which in turn have been found to relate to rape-tolerant attitudes and sexual violence behaviors (Brown & L'Engle, 2009; Rodenhizer & Edwards, 2017). Exposure to violent pornography may relate to TDV to a greater extent for boys because they may be more frequently exposed and exposed to more extreme images, which may contribute to attitudes more accepting of interpersonal violence, and sexual violence in particular. On the other hand, some male adolescents may simply possess a propensity for aggression, which is manifested in violence in their dating relationships and intentional consumption of images that depict violence and degradation. Future longitudinal research is needed to help understand these relationships.

Our findings are also consistent with $_3$AM of sexual media socialization (Wright, 2011) and other social cognitive theories (Brown & L'Engle, 2009) that posit that adolescents acquire information about sexual roles and behaviors through sexual media consumption and observing relevant models. Specifically, with increasing exposure to degrading and/or aggressive depictions of sexual relationships, these types of scripts are more likely to be activated and applied in real-life dating relationships. This may especially be the case for boys exposed to depictions of violence toward a sexual partner, as they were more likely to perpetrate and be victims of sexual TDV in their own dating relationships. This is also consistent

with the confluence model of sexual aggression, which suggests that pornography exposure may exacerbate risk of violence and aggression for some boys and men (Malamuth et al., 2000), as well as research demonstrating an association between exposure to violent sexually explicit material and sexually aggressive behaviors (Ybarra et al., 2011). That said, the cross-sectional nature of our data, though consistent with these models, cannot be utilized to support the directionality of these theories. Further longitudinal work is needed to explore components of causality.

Another possibility is that adolescents who are exposed to violent pornography and TDV possess existing deviant or violent tendencies that compel them to seek out violent pornography, which in turn, reinforces and normalizes their behavior. The confluence model (Malamuth et al., 2000) suggests that some boys and young men possess certain characteristics, such as hostile masculinity and sexual promiscuity, that may predispose them to aggression, and when exposed to violent pornography, this risk may be further intensified. This was partially supported by the association between current substance use, history of suspension/expulsion, acceptance of rape myths, and less gender equitable attitudes and TDV after controlling for pornography exposure. However, it is not entirely clear why violent pornography exposure—in addition to rape myth acceptance and less gender equitable attitudes—would be related to physical TDV victimization and not perpetration among male participants. Perhaps among male adolescents who tolerate rape myths and hold more rigid attitudes about masculinity and gender, exposure to violent pornography normalizes victimization in dating relationships. Alternatively, there may be additional third variables related to the dynamics of the dating relationship that were not measured and may increase risk of both pornography exposure and TDV, which could have accounted for these associations.

Interestingly, for most TDV outcomes among girls (with the exception of threatening TDV perpetration), exposure to violent pornography was not a significant predictor; instead, heavy alcohol and marijuana use predicted TDV perpetration and victimization. Marijuana use was also a strong predictor of TDV for boys. This is consistent with a growing body of research demonstrating a significant association between substance use and TDV (Parker, Debnam, Pas, & Bradshaw, 2016; Temple et al., 2013). Indeed, our findings suggest that engaging in one problem behavior may increase risk of engaging in another (Jessor & Jessor, 1977), and thus, addressing one problem behavior (e.g., substance use) in prevention efforts for adolescents may help prevent engagement in other ones (e.g., TDV).

Our lack of findings on exposure to violent pornography and most TDV outcomes for adolescent females may reflect a number of contextual factors. First, we do not know whether females who reported exposure to violent pornography were intentionally seeking out this content or were being exposed to this content by someone else. Intentionality may be a critical component in understanding how and when violent pornography becomes intertwined with TDV. Further research investigating the context of viewing is needed. Second, most of the content of violent pornography involves male aggression toward other; females are depicted as victims. This dynamic may not align with the dynamics of mutual violence observed in adolescent dating relationships and may reduce the potential impact of violent pornography on females. Research is needed to better understand gender-specific attitudes about violent pornography.

Our findings have several implications for strategies to prevent TDV. Violent pornography exposure was related to an increased likelihood of TDV, though relationships were mostly detected for male participants. Accordingly, health professionals, educators, and other service providers may consider these findings in the context of comprehensive programming to prevent TDV and other forms of violence. School- and community-based prevention efforts could consider how viewing violent sexually explicit content may impact adolescents' real-life violent behaviors in dating relationships and teach healthy relationship skills as an alternative to what students may be exposed to in violent pornography. Moreover, exposure to violent pornography may be less likely when schools and communities engage influential adults and peers to endorse social norms that promote safe and healthy relationships. School- and community-based efforts could provide alternative sources of education about healthy sexual behavior and relationships, and promote media literacy through discussions of reality versus fantasy in pornographic depictions of sex, realistic expectations for sex, and the concept of consent (Lim et al., 2016). Parents may consider discussing with their children healthy interpersonal behavior and how to think critically about content that depicts unhealthy behavior. More research is needed on how adolescents view violent pornography to inform strategies to limit potential associated risk. Because technology is evolving and pornography may become more aggressive and deviant in nature (Bridges et al., 2010; Dekeseredy, 2015), future research may need to consider ways to reduce changing risks and increase healthy and safe interpersonal skills.

Limitations

Study findings should be considered in the context of its limitations. First, because the design was cross-sectional, we cannot draw conclusions about causality between violent pornography exposure and TDV. Thus, it is not clear whether exposure to pornography increases adolescents' risk of TDV perpetration or victimization, or whether those who engage in TDV are at risk of pornography exposure. Studies that examine the influence of early exposure to violent pornography on later TDV and how involvement in TDV may influence

exposure would help establish temporality. Second, our measure of pornography exposure did not inquire about intentional viewing, limiting our understanding of the impact of intentional versus passive, or coerced viewing, which may especially be the case in violent dating relationships. Similarly, our measure may have underestimated exposure because it did not inquire about Internet-based pornography specifically. The present research also did not garner a person-level assessment of participant race and ethnicity. Although we can estimate the racial composition of study sites, these estimates should be used with caution. Finally, our sample only included adolescents from one geographical area, limiting generalizability.

Conclusions

The present research highlights the importance of considering violent pornography exposure as a potential risk factor for TDV. Preventing TDV and future intimate partner violence requires comprehensive prevention strategies, such as teaching safe and healthy relationship skills and disrupting the developmental pathways toward partner violence (Niolon et al., 2017). Addressing risk factors, such as youth's exposure to violent pornography, may have short- and long-term impacts on the prevention of violence in dating relationships. For instance, efforts to promote positive social norms and provide alternative sources of education about healthy sexual behavior and relationships may decrease adolescents' acceptance of violence and promote healthy interpersonal relationships throughout the lifespan. Moving forward, additional work is needed to better understand whether there is indeed a causal relationship between violent pornography exposure and TDV, and the mechanisms through which pornography exposure may increase risk of various types of interpersonal violence.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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