Published in final edited form as:

Aggress Behav. 2018 March ; 44(2): 156–164. doi:10.1002/ab.21739.

Does change in perceptions of peer teen dating violence predict change in teen dating violence perpetration over time?

Ryan C. Shorey¹, Brian Wymbs¹, Liz Torres², Joseph R. Cohen³, Paula J. Fite³, and Jeff R. Temple²

¹Ohio University

²UTMB

³University of Illinois

⁴University of Kansas

Abstract

Research has previously demonstrated that perceptions of peer's teen dating violence (TDV) is associated with one's own perpetration of TDV, although little research has examined whether this relationship is consistent across developmental time periods (i.e., mid-to-late adolescence). The present study examined whether changes in perceptions of peer's TDV predicted change in one's own perpetration of TDV in a sample of ethnically diverse adolescents from ages 15 to 18 ($N=1,042$). Parallel process modeling demonstrated that decreases in perceptions of peer's TDV predicted decreases in TDV perpetration over time, and this relationship was more pronounced for males than females. These findings lend further support to the need for TDV prevention and intervention programs to include peer influence in their programs.

Keywords

Teen dating violence; peer violence; adolescence; peers; developmental

Teen dating violence (TDV) is a serious and prevalent public health problem. Each year, approximately 10-25% of teens will report perpetrating and/or being the victim of physical TDV (Temple, Shorey, Fite, Stuart, & Le, 2013; Vagi, Olsen, Basile, & Vivolo-Kantor, 2015), with research also showing that the prevalence of physical TDV remains stable over time (e.g., Fritz & Slep, 2009; Temple et al., 2013). For instance, among high school students, research has shown that physical TDV perpetration remains moderately stable over the course of 1 year (Fritz & Slep, 2009). Prior research has also shown that adolescents follow different trajectories of TDV perpetration from 6-12th grades, such that some adolescents are consistently high in TDV perpetration over time while other adolescents are consistently low in TDV over time (Orpinas, Hsieh, Song, Holland, & Nahapetyan, 2013). Thus, the trajectories of TDV perpetration varies across adolescents. Moreover, victims of

Corresponding Author: Ryan C. Shorey, Ph.D., Assistant Professor, Ohio University, Department of Psychology, 239 Porter Hall, Athens, Ohio 45701, Phone: (740) 597-3298, shorey@ohio.edu.

Conflicts of Interest: The authors have no conflicts of interest to report.

TDV perpetration report higher depressive and post-traumatic stress symptomatology (Wolitzky-Taylor et al., 2008), substance use (Ackard, Neumark-Sztainer, & Hannan, 2002), sexually transmitted infections (Silverman, Raj, Mucci, & Hathaway, 2001), risky sexual behavior (Shorey et al., 2015), and suicidal ideation (Silverman et al., 2001). In addition, the perpetration of TDV is associated with greater risk for TDV victimization (Friedlander, Connolly, Pepler, & Craig, 2013), as most violence in intimate relationships is bidirectional (Ulloa & Hammett, 2016) and thus may contribute to a cyclical pattern of TDV. Moreover, violence perpetration is associated with more frequent negative emotions for the perpetrator (Shorey et al., 2012). Given its prevalence, consequences, and the fact that TDV remains stable throughout high school, there is a crucial need for research on longitudinal risk factors for perpetrating TDV, as these could be targeted in TDV prevention and intervention programs.

Peer TDV

The developmental life course is marked by important shifts in the youth's social ecology. While the majority of support and conflict in pre-adolescence stems from familial relationships, early and middle adolescence sees an increase in the importance of peer relations (Furman & Buhrmester, 1992; Brown & Bakken, 2011). Thus, beginning in early adolescence, peers play an increasingly influential role in both prosocial and non-prosocial behavior (Miller-Johnson & Costanzo, 2004; Steinberg, 2014). In addition, peers are influential in the formation of intimate relationships during adolescence, with particular influence in early-to-middle adolescence (Brown, 1999; Connolly, Furman, & Konarski, 2000). According to interdependence theory (Thibaut & Kelley, 1959), adolescents act in similar ways to their close peers, as they look to their peers for normative behavior (Conger, Cui, Bryant, & Elder, 2000), including those related to normative acts of dating behavior and conflict resolution tactics (Brown, 1999; Connolly et al., 2000; Furman, Simon, Shaffer, & Bouchey, 2002). Similar to how converging profiles of support and conflict exist between one's family and peer relations (Cohen et al., 2015), adolescents' peer relationships in middle adolescence are critical in the development of cognitions and behaviors related to intimate relationships. During late adolescence, a critical shift occurs as romantic partners become increasingly important within adolescents' social system, whereas romantic partners in early-to-middle adolescence are less influential (Furman & Buhrmester, 1992; Furman & Wehner, 1997). Thus, peer and romantic relationships, and the interplay between the two, change substantially across adolescence.

Based largely on interdependence theory, the TDV literature has recognized the importance of peers in the development of intimate relationships by examining the link between a person's perceptions of their peer's TDV and their own engagement in TDV perpetration. For instance, past research with adolescents has demonstrated that adolescents who associate with peers who have used aggression, or approve of the use of aggression in dating relationships, are more likely to perpetrate TDV than adolescents who do not associate with such peers (e.g., Arriaga & Foshee, 2004; Reed, Silverman, Raj, Decker, & Miller, 2011). A recent meta-analysis of 11 studies, both cross-sectional ($n=8$ studies; e.g., Sears, Sandra Byers, & Price, 2007) and longitudinal ($n=3$ studies; e.g., Foshee et al., 2001), demonstrated a mean effect size of $r = .29$ (i.e., medium effect) for the association between peers' TDV

and adolescents' own perpetration of TDV (Garthe, Sullivan, & McDaniel, 2017). Thus, consistent with interdependence theory, perception of peers TDV is influential in an adolescent's own TDV perpetration.

Despite this accumulating evidence linking these variables, gaps remain in the literature. First, while conclusions that can be drawn from simple longitudinal association studies, where perceptions of peer TDV at one time point predict an individual's own TDV at a subsequent time point, provide a clearer indication of potential causal process than cross-sectional studies, they do not take into account the shifts in social ecology which could contribute to different perspectives of peer and romantic relations over time. Specifically, prior prospective studies of peer and self TDV have not examined whether *changes* in perceptions of peer TDV predict *changes* in an individual's own TDV perpetration. While short-term, prospective studies show peer and self TDV behavior as relatively stable, there is likely to be substantial variability over time in both forms of behavior when measured across developmental periods. While collective research concerning how TDV behavior changes throughout adolescence has important implications for prevention and intervention, by simultaneously investigating fluctuations in perceptions of peer TDV along with individuals own TDV behavior, we are able to examine developmentally-sensitive times when policy makers should target this variable risk factor in adolescence. Based on interdependence theory, it is plausible that peer's TDV would have a stronger influence on TDV perpetration in early-to-middle adolescence, with less influence in late adolescence, as peers become less influential in romantic relationships in late adolescence.

In addition to age differences, it is not clear whether the association between peer's TDV and TDV perpetration varies by gender. Regarding peer influence in general, some studies suggest that girls' behavior may be influenced by peers to a greater extent than boys, including sexual behavior and aggression (e.g., Upadhyay & Hindin, 2006; Werner & Crick, 2004). Yet, other studies suggest that girls may have greater autonomy from peers than boys, and that deviant behavior of peers is associated with boy's deviant behavior more strongly than it is for girls (e.g., Storvoll & Wichstrom, 2002). Specific to TDV, one prior study demonstrated that the relationship between peer TDV and adolescent's own TDV did not differ by gender (Arriaga & Foshee, 2004), although other studies have demonstrated that this association is stronger for girls than boys (Ellis, Chung-Hall, & Dumas, 2013). A recent meta-analysis demonstrated no significant gender difference in this association (Garthe et al., 2017). However, these authors noted that many studies examined effects for gender independently, and did not conduct direct statistical comparisons between genders. To address this, we examined gender as a potential moderator of the association between peers' TDV and TDV perpetration.

Current Study

Using a large and ethnically diverse sample of adolescents, we examined whether changes in perceptions of peer's TDV predicted changes in perpetration of TDV across 4 years. Although there is considerable overlap between TDV perpetration and victimization, we focused exclusively on TDV perpetration in order to identify a potentially malleable risk-factor for this problematic behavior from mid-to-late adolescence. Based on interdependence

theory, which proposes that peers influence adolescents' behavior, we predicted that changes in perception of peers' TDV perpetration would predict changes in adolescents' own perpetration of TDV across time. However, due to a lack of research in this area, we did not make a priori predictions regarding whether this association would be stronger or weaker depending on gender.

Method

Participants

We used data from *Dating it Safe*, an ongoing longitudinal study of adolescent health (e.g., Temple et al., 2013). Participants were 1,042 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 & Wislar, 2012). In order to have a sample of racially and financially diverse students, schools were recruited from urban, rural, and suburban areas. All schools approached agreed to participate. Participants have been followed annually since spring of 2010, when they were Freshman or Sophomore high school students. For this particular study, data are from Wave 1 (spring 2010); Wave 2 (spring 2011; retention rate: 93% of those surveyed at baseline), Wave 3 (spring 2012; retention = 93% of Wave 2 participants); Wave 4 (spring 2013; retention = 87% of Wave 3 participants); and Wave 5 (spring 2014; retention = 90% of Wave 4 participants).

Procedures

For participating in the surveys, students received a \$10 gift card at Waves 1, 2, and 3 and a \$20 gift card at Waves 4 and 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. When participants graduated high school, administration moved from paper-pencil to web-based surveys. At Wave 1, the sample had a mean age of 15.09 ($SD = 0.79$), consisted of slightly more females (56%) than males, and self-identified as African American (27.9%), White (29.4%), Hispanic (31.4%), and other (11.3%). The study was approved by the last author's Institutional Review Board, and active parent consent and student assent/consent were obtained.

Measures

Teen Dating Violence—Perpetration of physical TDV was measured with 4 items from the Conflict in Adolescent Dating Relationships Inventory (CADRI; Wolfe et al., 2001). Adolescents responded yes/no to questions about their own behavior in their lifetime (Baseline) and in the past year (Times 2-5): “I threw something at him/her,” “I kicked, hit, or punched him/her,” “I slapped him/her or pulled his/her hair,” and “I pushed, shoved, or shook him/her.” All items were summed to create a total TDV score, which could range from 0-4, with higher scores corresponding to more frequent TDV. The CADRI has shown good reliability and validity (Wolfe et al., 2001). Internal consistencies for the current study ranged from .76 to .86 across the course of the study.

Peer Dating Violence—Peer dating violence was measured with the following item using a 5-point scale (1 = none of them, 5 = all of them): “During the last year how many of your friends have hit, slapped, choked, or beat up a boyfriend/girlfriend?” For this variable, scores were dichotomized due to restricted range of responses (e.g., 18% reported choice “1” at the first assessment), such that individuals who endorsed none of their friends as having perpetrated TDV were scored a “0” and all other scores were coded a “1”.

Data Analytic Plan

We utilized parallel process latent growth curve models to examine whether peer TDV was associated with TDV perpetration (herein referred to as “self TDV”) from ages 15 to 18. First, we estimated separate unconditional, univariate growth curve models for self TDV and peer TDV assessed from ages 15 to 18 to evaluate change in constructs over time, and then examined a parallel process growth model of peer TDV and self TDV over time that estimated the covariances among growth factors (intercept, slope; Figure 1). As we were specifically interested in the clinical utility of examining peer influences on TDV, perceptions of peer TDV was the independent variable in the parallel process growth model. Next, we examined whether participant gender moderated predictive associations between peer TDV growth factors and self TDV growth factors, such that the interaction between participant gender and fluctuations in perceived peer TDV predicted the level of change in self TDV over time.

Latent growth curve modeling was conducted with Mplus 7.0 (Muthén & Muthén 2012). When examining physical TDV, we utilized the maximum likelihood estimator robust to non-normality (MLR), due to positive skew for this variable. For peer TDV, weighted least squares estimate with a mean and variance adjusted chi-square statistic (WLSMV) was utilized because indicators were dichotomous. For the parallel process growth model, MLR was used due to the outcome (self TDV) being a continuous variable. Fit for the unconditional growth curve models was assessed using χ^2 , root mean square error of approximation (RMSEA), and comparative fit index (CFI). The chi-square fit index is calculated by dividing the chi-square estimate by the degrees of freedom, with values of less than 2.0 indicative of good fit. Good model fit for RMSEA is equal to or less than 0.06 and for the CFI when it is equal to or greater than 0.95 (Hu & Bentler 1999). Fit for the parallel process growth model was assessed using χ^2 , Akaike information criteria (AIC), and Bayesian information criteria (BIC) values. Lower AIC and BIC scores indicate better fit (Kline 2011). Mplus does not calculate RMSEA and CFI estimates for parallel growth models including examining associations between growth factors with continuous and dichotomous indicators.

Because we were interested in examining the association between self TDV and peer TDV across different developmental periods, we modeled variables by age rather than by year of the annual assessment as recommended when age varies considerably within the sample in a given year or “wave” (Bollen & Curran, 2006). Indeed, prior research has utilized this approach when examining intimate partner violence with adolescents and young adults (e.g., Wymbs et al., 2014). For example, for those who were 15 years old at Wave 1 and completed questionnaires as part of 3 consecutive waves thereafter, their reports of self TDV and peer

TDV at ages 16, 17, and 18 were included in the analyses. The following numbers of adolescents provided data at ages 15 ($n = 732$), 16 ($n = 941$), 17 ($n = 909$), and 18 ($n = 795$).

Results

Preliminary Descriptive Statistics

Across the entire sample, means of self TDV from age 15 to age 18 suggest a rather level degree of self-reported TDV for the first three time-points assessed (age 15: 0.37; age 16: 0.37; age 17: 0.42), before decreasing by the last time point (age 18: 0.32). The prevalence of self TDV remained relatively stable across all ages (15: 19.1%; 16: 19.6%; 17: 19.2%; 18: 15.5%). The perception of peer TDV increased from age 15 (18% endorsed peer TDV) to age 16 (20%), but then was stably lower at ages 17 (16%) and 18 (16%). Table 1 presents bivariate correlations between self TDV and peer TDV across each age and gender. Table 1 also includes means and stand deviations broken down by gender.

Unconditional Models of Physical and Peer TDV

For self TDV, a linear growth trajectory was a good fit to the data, $\chi^2(5) = 9.22$, $p = .10$; RMSEA = .03; CFI = .98. The mean of the intercept was significant ($M = .42$, $p < .001$), suggesting that on average participants reported less than 1 act of self TDV at age 15. There was also significant variability around the intercept (variance = .72, $p < .001$), indicating that there were significant individual differences in self TDV at this age. The mean of the growth rate (slope) of self TDV was not statistically significant ($M = -.02$, $p = .139$), indicating that the average level of self TDV did not change over time. However, there was significant variability around the slope (variance = .06, $p < .001$), suggesting that there were individual differences in the average level of self TDV over time. The correlation between the intercept and slope of self TDV was significant (variance = -.15, $p = .001$), indicating that higher initial levels of self TDV were associated with decreases in self TDV over time. We tested an intercept only model, and found that it did not fit the data, $\chi^2(8) = 31.33$, $p < .01$; RMSEA = .05; CFI = .89. Because the fit of this model was significantly worse than the fit of the slope model, $\chi^2(3) = 22.11$, $p < .01$, we opted to use the slope model in subsequent analyses.

A linear growth trajectory also fitted the data for peer TDV, $\chi^2(2) = 3.66$, $p = .16$; RMSEA = .03; CFI = 1.00. The mean of the intercept was zero (typical for intercepts of growth models with dichotomous indicators), but the variance of the intercept was significant (variance = .66, $p < .001$), indicating significant individual differences in peer TDV at age 15. The mean of the slope of peer TDV was significant ($M = .22$, $p < .01$), indicating that the level of peer TDV significantly increased over time. Variability around the slope was also significant (variance = .06, $p < .001$), indicating there were individual differences in the average level of peer TDV over time. The correlation between the intercept and slope of peer TDV was significant (variance = -.20, $p = .001$), indicating that higher initial levels of peer TDV were associated with decreases in peer TDV over time. We tested an intercept only model, and found that it fitted the data reasonably well, $\chi^2(5) = 19.10$, $p < .01$; RMSEA = .05; CFI = .97. However, because the fit of this model was significantly worse than the fit of

the slope model, $\chi^2(3) = 15.44, p < .01$, we opted to use the slope model in subsequent analyses.

Parallel Process Growth Model

For this model, all covariances (no directional paths) were estimated among the growth factors, and the covariances among residuals of self and peer TDV measured within-age were fixed to be equal across ages. The parallel process growth model displayed acceptable fit, $\chi^2(10) = 15.67, p = .11$, AIC = 10217.71, BIC = 10306.69. The mean of the slopes for self and peer TDV were nonsignificant while the variability around the slopes was significant (self: variance = .07, $p < .001$; peer: variance = .47, $p < .05$). Higher initial levels of self TDV were associated with higher initial levels of peer TDV ($p < .001$) and steeper decreases in peer TDV ($p < .001$). Higher initial levels of peer TDV were associated steeper decreases in self TDV ($p < .001$). Steeper decreases in self TDV were associated with steeper decreases in peer TDV ($p < .001$).

Next we examined a model where the slope of peer TDV predicted the slope of self TDV, as well as the intercept of peer TDV predicting the intercept of self TDV (see Figure 2).¹ This model fitted the data well, $\chi^2(10) = 15.67, p = .11$, AIC = 10217.70, BIC = 10306.67, and according to the AIC and BIC values, it fitted modestly better than the unconditional parallel process model tested above. Results demonstrated that peer TDV at age 15 positively and significantly predicted greater self TDV at age 15 ($B = .16, SE = .03, p < .001$). The slope of peer TDV was found to significantly predict the slope of self TDV ($B = .22, SE = .09, p = .012$), such that steeper decreases in peer TDV predicted steeper decreases in self TDV.

Last, we examined whether any of the predictive paths varied between genders². This model fitted the data well, $\chi^2(10) = 102.24, p < .001$, AIC = 9858.25, BIC = 9967.00, and according to the AIC and BIC values, it fitted modestly better than the conditional parallel process model tested above. Moderation analyses demonstrated significant interactions between gender and the peer TDV intercept in predicting the intercept of self TDV ($B = -.70, SE = .13, p < .001$). Decomposition of this interaction demonstrated that greater peer TDV at age 15 predicted greater self TDV at age 15 for males ($B = 1.56, SE = .30, p < .001$) and predicted lower self TDV at age 15 for females ($B = -.53, SE = .12, p < .001$). There was also a significant interaction between gender and the peer TDV slope in predicting the slope of self TDV ($B = -1.01, SE = .24, p < .001$). Decomposition of this interaction demonstrated that steeper decreases in peer TDV predicted steeper decreases in self TDV for males ($B = 2.54, SE = .50, p < .001$), but the same pathway was not significant for females.

Discussion

Teen dating violence (TDV) is a serious public health problem in need of effective interventions. Efforts to reduce TDV will be informed by studies that examine salient risk factors for TDV perpetration, and the current study sought to expand the literature by

¹We attempted to run a model where peer TDV was the dependent variable and self TDV was the independent variable. However, this model would not converge.

²We attempted to run a model where race/ethnicity was the moderator. However, this model would not converge.

examining how change in perceptions of peer TDV relates to changes in TDV perpetration. Thus, using an ethnically diverse sample of adolescents, we examined whether changes in peer TDV predicted changes in perpetration of TDV from ages 15 to 18. Moreover, we examined whether there were gender differences in the strength of the predictive associations between peer TDV and TDV perpetration.

Our findings demonstrated that, at age 15, perceptions of peers' TDV was positively associated with TDV perpetration. This is consistent with a broad literature suggesting a positive association between these two constructs at the cross-sectional level (Garthe et al., 2017). In addition, results from our parallel process growth model demonstrated that changes in perception of peers' TDV predicted changes in TDV perpetration. Specifically, decreases in the perception of peer engagement in TDV over time predicted decreases in self-reports of TDV perpetration. As there was substantial variability in the slope of peer and self TDV, one can also interpret this pattern of results to indicate that adolescents whose peers report increasing TDV will be susceptible to self-reporting increasing TDV perpetration over time. Although prior longitudinal studies have demonstrated peer TDV is associated with TDV perpetration over time (e.g., Foshee et al., 2001), our findings extend these prior longitudinal studies by examining how developmental changes in a risk factor for TDV perpetration (i.e., peer TDV) predict the degree to which TDV self-perpetration changes across middle-to-late adolescence.

Moderation analyses demonstrated relations among peer TDV and one's own TDV were not consistent between genders. For instance, at age 15, greater perception of peer TDV predicted greater self TDV perpetration for males, yet predicted *lower* self TDV for females. Moreover, interaction analyses with the parallel process model demonstrated that steeper decreases in peer TDV predicted steeper decreases in self TDV for males, but this was not the case for females. As mentioned previously, the literature is mixed on whether peer influences on aggression is stronger or weaker for males than females (Garthe et al., 2017), although some research suggests that males may be more influenced by, and more likely to imitate, the deviant behavior of peers than females (Storvoll & Wichstrom, 2002). Our findings can be interpreted as being consistent with the prediction that deviant behavior of peers is more influential on deviant behavior for males than females. However, these findings should be considered preliminary until replicated in future research.

Directions for Future Research and Intervention

Despite our study extending the literature on the association between peer and adolescent TDV across time, there are a number of important future directions for research in this area. Our study investigated adolescents starting at the age of 15, when many adolescents had already begun dating and had experiences of TDV. Thus, because research suggests TDV is present during middle school years (e.g., Niolon et al., 2015), and peers may be more involved with romantic relationships in early relative to late adolescence (Furman & Wehner, 1997), future research should follow adolescents beginning in early adolescence, and prior to the onset of dating, to determine what influence, if any, peers' TDV has on the onset of self-TDV perpetration. Moreover, while we followed participants from mid-to-late adolescence, it would be fruitful for future research to follow participants into young

adulthood (e.g., 18-25), the time period when aggression between intimate partners peak (O'Leary, 1999), to determine what influence peer's violence exerts at this unique developmental period.

From an intervention perspective, there is now ample evidence that peers influence TDV. Our findings suggest that decreases in perceptions of peers' TDV across middle-to-late adolescence is associated with decreases in self TDV perpetration. Therefore, prevention and intervention programming for TDV should incorporate peer influence into their programs, particularly in programs that target early-to-middle adolescents. For example, a component of an existing TDV prevention program, *Fourth R* (Wolfe, et. al., 2009), addresses positive relationship skills through peer-to-peer role-play in navigating challenging peer and dating scenarios. Additional research, with *Fourth R* and other programs, should investigate whether these programs produce beneficial effects, in part, due to changing perceptions of peers' TDV.

Drawing from the broader aggression literature, there is evidence to suggest that bystander programs may be an important component of interventions for aggression that could be incorporated into TDV programs. Bystander intervention programs “aim to decrease sexual violence by increasing bystanders' efficacy and willingness to engage in behaviors to deter potential sexual assault and to come to the aid of a victim—or potential victim— of sexual assault” (Kleinsasser et al., 2015, pp. 227-228). Bystander programs have historically focused on sexual assault among college student populations (e.g., Gidycz, Orchowski, & Berkowitz, 2011), although recent work has extended these programs to physical violence (e.g., Borsky, McDonnell, Turner, & Rimal, 2016) and high school students (Edwards, Eckstein, & Rodenhizer-Stampfli, 2015). Because bystander programs also attempt to target maladaptive beliefs and attitudes related to violence, such as erroneous perceptions of peer involvement in violence, it would be fruitful to examine the impact of bystander interventions, adapted for TDV, on perceptions of peers' TDV.

Limitations

The current study has several limitations that should be considered. Our measure of peer TDV consisted of a single data analysis, and thus may not capture the complexity of this variable. Although prior research has utilized single item measures to examine peer physical TDV (Sears et al., 2007), future research should attempt to more comprehensively assess this construct. In addition, we asked participants to report on their perception of how many of their peers were engaging in TDV. This method for assessing peer TDV is common in the literature (Garthe et al., 2017). However, researchers could also assess TDV directly from peers. There are also problems with this approach, however, such as determining which peer(s) to include (see Garthe et al., 2017 for review). This would represent an extension of the current study and should be considered in future research.

Moreover, because adolescents rated their peers' TDV, and we did not obtain actual reports from peers, this leaves open the possibility that our peer TDV assessment was influenced by self-justification biases. That is, in an effort to reduce cognitive dissonance, adolescents who were violent may have been more likely to report that their peers were also violent. Future research should examine this possibility. Additionally, we did not assess whether adolescents

had direct knowledge of their peers' engagement in TDV (e.g., have they witnessed their peers' TDV behavior; have peers disclosed involvement in TDV). Therefore, future research should not only assess perceptions of peers' TDV, but also direct knowledge of peers' TDV. We also only focused on one type of TDV (i.e., physical) and additional research should examine whether perceptions of peers' psychological and/or sexual TDV influence the perpetration of these forms of TDV from mid-to-late adolescence.

Conclusion

In summary, we investigated whether changes in the perception of peers' TDV perpetration predicted changes in self TDV perpetration from the ages of 15 to 18 in a large, ethnically diverse sample of adolescents. We also examined whether this longitudinal relationship varied between males and females. Our findings demonstrated that perceptions of peers' TDV was associated longitudinally with self TDV perpetration, with decreasing perceptions of peers' TDV involvement predicting decreases in self TDV perpetration. Moreover, moderation analyses demonstrated that this association was present for males only; perceptions of peers' TDV was negatively associated with females' TDV at age 15, and was not associated over time. In all, our findings suggest that TDV prevention and intervention programs may benefit from targeting peer behavior and perceptions. In turn, these efforts may reduce TDV perpetration and the negative consequences associated with both victimization and perpetration of TDV.

Acknowledgments

The current manuscript was supported, in part, by grants 2016-R2-CX-0035 and 2012-WG-BX-0005 from the National Institute of Justice (NIJ) awarded to the first and last authors, respectively. This work was also supported, in part, by award K23HD059916 from the Eunice Kennedy Shriver National Institute of Child Health & Human Development (NICHD) awarded to the last author. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or NIJ.

References

- Ackard DM, Neumark-Sztainer D, Hannan P. Dating violence among a nationally representative sample of adolescent girls and boys: Associations with behavioral and mental health. *The Journal of Gender-Specific Medicine: JGSM: The Official Journal of the Partnership for Women's Health at Columbia*. 2002; 6:39–48. doi:10.1.1.514.8647.
- Arriaga XB, Foshee VA. Adolescent dating violence do adolescents follow in their friends', or their parents', footsteps? *Journal of Interpersonal Violence*. 2004; 19:162–184. DOI: 10.1177/0886260503260247 [PubMed: 15006000]
- Bollen, KA., Curran, PJ. *Latent curve models A structural equation perspective*. Hoboken, NJ: John Wiley & Sons, Inc; 2006.
- Borsky AE, McDonnell K, Turner MM, Rimal R. Raising a red flag on dating violence evaluation of a low-resource, college-based bystander behavior intervention program. *Journal of Interpersonal Violence*. 2016; Advanced online publication. doi: 10.1177/0886260516635322
- Brendgen M, Vitaro F, Tremblay RE, Wanner B. Parent and peer effects on delinquency-related violence and dating violence: a test of two mediational models. *Social Development*. 2002; 11:225–244. DOI: 10.1111/1467-9507.00196
- Brener ND, Kann L, Shanklin S, Kinchen S, Eaton DK, Hawkins J, Flint KH. Methodology of the youth risk behavior surveillance system—2013. *Morbidity and Mortality Weekly Reports*. 2013; 62:1–23. <https://www.cdc.gov/mmwr/pdf/rr/rr6201.pdf>.

- Brown, BB. "You're going out with who?": Peer group influences on adolescent romantic relationships. In: Furman, W. Brown, BB., Feiring, C., editors. *The development of romantic relationships in adolescence*. Cambridge, UK: Cambridge University Press; 1999. p. 291-329.
- Brown BB, Bakken JP. Parenting and peer relationships: Reinvigorating research on family-peer linkages in adolescence. *Journal of Research on Adolescence*. 2011; 21:153-165. DOI: 10.1111/j.1532-7795.2010.00720.x
- Cohen JR, Spiro C, Young JF, Gibb BE, Hankin BL, Abela JRZ. Interpersonal risk profiles for youth depression: A person-centered, multi-wave, longitudinal study. *Journal of Abnormal Child Psychology*. 2015; 43:1415-1426. DOI: 10.1007/s10802-015-0023-x [PubMed: 25907029]
- Conger RD, Cui M, Bryant CM, Elder GH Jr. Competence in early adult romantic relationships: a developmental perspective on family influences. *Journal of Personality and Social Psychology*. 2000; 79:224. doi: 10.1037/1522-3736.4.1.411a [PubMed: 10948976]
- Connolly J, Furman W, Konarski R. The role of peers in the emergence of heterosexual romantic relationships in adolescence. *Child Development*. 2000; 71:1395-1408. DOI: 10.1111/1467-8624.00235 [PubMed: 11108103]
- Edwards, K., Eckstein, RP., Rodenhizer-Stampfli, KA. Should I Say Something? Dating and sexual aggression bystander intervention among high school youth. The Carsey School of Public Policy at the Scholars' Repository. 2015. Paper 259. <http://scholars.unh.edu/carsey/259>
- Ellis WE, Chung-Hall J, Dumas TM. The role of peer group aggression in predicting adolescent dating violence and relationship quality. *Journal of Youth and Adolescence*. 2013; 42:487-499. DOI: 10.1007/s10964-012-9797-0 [PubMed: 22847751]
- Foshee VA, Linder F, MacDougall JE, Bangdiwala S. Gender differences in the longitudinal predictors of adolescent dating violence. *Preventive Medicine*. 2001; 32:128-141. DOI: 10.1006/pmed.2000.0793 [PubMed: 11162338]
- Friedlander LJ, Connolly JA, Pepler DJ, Craig WM. Extensiveness and persistence of aggressive media exposure as longitudinal risk factors for teen dating violence. *Psychology of Violence*. 2013; 3:310-322. doi:org/10.1037/a0032983.
- Fritz PA, Smith Slep AM. Stability of physical and psychological adolescent dating aggression across time and partners. *Journal of Clinical Child & Adolescent Psychology*. 2009; 38:303-314. DOI: 10.1080/15374410902851671 [PubMed: 19437292]
- Furman W, Buhrmester D. Age and sex differences in perceptions of networks of personal relationships. *Child Development*. 1992; 63:103-115. DOI: 10.1111/j.1467-8624.1992.tb03599.x [PubMed: 1551320]
- Furman W, Simon VA, Shaffer L, Bouchey HA. Adolescents' working models and styles for relationships with parents, friends, and romantic partners. *Child Development*. 2002; 73:241-255. DOI: 10.1111/1467-8624.00403 [PubMed: 14717255]
- Furman W, Wehner EA. Adolescent romantic relationships: A developmental perspective. *New Directions for Child and Adolescent Development*. 1997; 1997:21-36. DOI: 10.1002/cd.23219977804
- Gardner M, Steinberg L. Peer influence on risk taking, risk preference, and risky decision making in adolescence and adulthood: an experimental study. *Developmental Psychology*. 2005; 41:625. doi: 10.1037/0012-1649.41.4.625 [PubMed: 16060809]
- Garthe RC, Sullivan TN, McDaniel MA. A meta-analytic review of peer risk factors and adolescent dating violence. *Psychology of Violence*. 2017; 7:45-57. DOI: 10.1037/vio0000040
- Gidycz CA, Orchowski LM, Berkowitz AD. Preventing sexual aggression among college men: An evaluation of a social norms and bystander intervention program. *Violence Against Women*. 2011; 17:720-742. DOI: 10.1177/1077801211409727 [PubMed: 21571742]
- Hu LT, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*. 1999; 6:1-55. DOI: 10.1080/10705519909540118
- Johnson TP, Wislar JS. Response rates and nonresponse errors in surveys. *Journal of the American Medical Association*. 2012; 307:1805-1806. DOI: 10.1001/jama.2012.3532 [PubMed: 22550194]

- Kleinsasser A, Jouriles EN, McDonald R, Rosenfield D. An online bystander intervention program for the prevention of sexual violence. *Psychology of violence*. 2015; 5:227–235. DOI: 10.1037/a0037393 [PubMed: 26240776]
- Miller-Johnson, S., Costanzo, P. If you can't beat'em... induce them to join you: Peer-based interventions during adolescence. In: Kupersmidt, JB., Dodge, KA., editors. *Children's peer relations: From development to intervention*. Washington, DC, US: American Psychological Association; 2004. p. 209-222. p. xvip. 289
- Monahan KC, Steinberg L, Cauffman E. Affiliation with antisocial peers, susceptibility to peer influence, and antisocial behavior during the transition to adulthood. *Developmental Psychology*. 2009; 45:1520.doi: 10.1037/a0017417 [PubMed: 19899911]
- Niolon PH, Vivolo-Kantor AM, Latzman NE, Valle LA, Kuoh H, Burton T, Tharp AT. Prevalence of teen dating violence and co-occurring risk factors among middle school youth in high-risk urban communities. *Journal of Adolescent Health*. 2015; 56:S5–S13. doi:org/10.1016/j.jadohealth.2014.07.019.
- Orpinas P, Hsieh HL, Song X, Holland K, Nahapetyan L. Trajectories of physical dating violence from middle to high school: Association with relationship quality and acceptability of aggression. *Journal of youth and adolescence*. 2013; 42:551–565. DOI: 10.1007/s10964-012-9881-5 [PubMed: 23233161]
- Reed E, Silverman JG, Raj A, Decker MR, Miller E. Male perpetration of teen dating violence: Associations with neighborhood violence involvement, gender attitudes, and perceived peer and neighborhood norms. *Journal of Urban Health*. 2011; 88:226–239. DOI: 10.1007/s11524-011-9545-x [PubMed: 21311987]
- Sears HA, Sandra Byers E, Lisa Price E. The co-occurrence of adolescent boys' and girls' use of psychologically, physically, and sexually abusive behaviours in their dating relationships. *Journal of Adolescence*. 2007; 30:487–504. DOI: 10.1016/j.adolescence.2006.05.002 [PubMed: 16884766]
- Shorey RC, McNulty JK, Moore TM, Stuart GL. Emotion regulation moderates the association between proximal negative affect and intimate partner violence perpetration. *Prevention Science*. 2015; 16:873–880. DOI: 10.1007/s11121-015-0568-5 [PubMed: 25995047]
- Shorey RC, Temple JR, Febres J, Brasfield H, Sherman AE, Stuart GL. The consequences of perpetrating psychological aggression in dating relationships: A descriptive investigation. *Journal of Interpersonal Violence*. 2012; 27:2980–2998. DOI: 10.1177/0886260512441079 [PubMed: 22550148]
- Silverman JG, Raj A, Mucci LA, Hathaway JE. Dating violence against adolescent girls and associated substance use, unhealthy weight control, sexual risk behavior, pregnancy, and suicidality. *Journal of the American Medical Association*. 2001; 286:572–579. DOI: 10.1001/jama.286.5.572 [PubMed: 11476659]
- Steinberg, L. *Adolescence*. 10th. New York, NY: McGraw Hill Higher Education; 2014.
- Steinberg L, Monahan KC. Age differences in resistance to peer influence. *Developmental Psychology*. 2007; 43:1531.doi: 10.1037/0012-1649.43.6.1531 [PubMed: 18020830]
- Storvoll EE, Wichstrøm L. Do the risk factors associated with conduct problems in adolescents vary according to gender? *Journal of Adolescence*. 2002; 25:183–202. DOI: 10.1006/jado.2002.0460 [PubMed: 12069434]
- Temple JR, Shorey RC, Fite P, Stuart GL, Le VD. Substance use as a longitudinal predictor of the perpetration of teen dating violence. *Journal of Youth and Adolescence*. 2013; 42:596–606. DOI: 10.1007/s10964-012-9877-1 [PubMed: 23187699]
- Thibaut, JW., Kelley, HH. *The social psychology of groups*. New York, NY: Wiley; 1959.
- Ulloa EC, Hammett JF. The effect of gender and perpetrator–victim role on mental health outcomes and risk behaviors associated with intimate partner violence. *Journal of Interpersonal Violence*. 2016; 31:1184–1207. DOI: <https://doi.org/10.1177/0886260514564163>. [PubMed: 25524265]
- Upadhyay UD, Hindin MJ. Do perceptions of friends' behaviors affect age at first sex? Evidence from Cebu, Philippines. *Journal of Adolescent Health*. 2006; 39:570–577. doi:org/10.1016/j.jadohealth.2006.03.004. [PubMed: 16982393]

- Vagi KJ, Olsen EOM, Basile KC, Vivolo-Kantor AM. Teen dating violence (physical and sexual) among US high school students: Findings from the 2013 National Youth Risk Behavior Survey. *JAMA pediatrics*. 2015; 169:474–482. DOI: 10.1001/jamapediatrics.2014.3577 [PubMed: 25730143]
- Werner NE, Crick NR. Maladaptive peer relationships and the development of relational and physical aggression during middle childhood. *Social Development*. 2004; 13:495–514. DOI: 10.1111/j.1467-9507.2004.00280.x
- Wolfe DA, Crooks C, Jaffe P, Chiodo D, Hughes R, Ellis W, Donner A. A school-based program to prevent adolescent dating violence: A cluster randomized trial. *Archives of Pediatrics and Adolescent Medicine*. 2009; 163:692–699. DOI: 10.1001/archpediatrics.2009.69
- Wolitzky-Taylor KB, Ruggiero KJ, Danielson CK, Resnick HS, Hanson RF, Smith DW, Kilpatrick DG. Prevalence and correlates of dating violence in a national sample of adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2008; 47:755–762. DOI: 10.1097/CHI.0b013e318172ef5f [PubMed: 18520962]
- Wymbs BT, Walther CA, Cheong J, Belendiuk KA, Pedersen SL, Gnagy EM, Molina BS. Childhood ADHD potentiates the association between problematic drinking and intimate partner violence. *Journal of Attention Disorders*. 2017; 21:997–1008. DOI: 10.1177/1087054714557358 [PubMed: 25394520]

Figure 1.
Proposed longitudinal model of the relationship between peer TDV and self TDV perpetration.

Figure 2.
Parallel process model examining association between peer TDV and self TDV perpetration.

Table 1
Bivariate correlations among study variables at different ages

Female								
	1.	2.	3.	4.	5.	6.	7.	8.
1. Self TDV – 15	---	.45***	.27***	.19**	.34***	.18**	.28***	-.04
2. Self TDV – 16		---	.47***	.40***	.27***	.31***	.29***	.11*
3. Self TDV – 17			---	.53***	.16**	.26***	.29***	.18***
4. Self TDV – 18				---	.12*	.19**	.26***	.25***
5. Peer TDV – 15					---	.42***	.41***	.11*
6. Peer TDV – 16						---	.35***	.27***
7. Peer TDV – 17							---	.35***
8. Peer TDV – 18								---
<i>M</i>	.54	.54	.65	.45	.21	.20	.18	.18
<i>SD</i>	1.06	1.06	1.21	1.03	.40	.40	.39	.37
Male								
	1.	2.	3.	4.	5.	6.	7.	8.
1. Self TDV – 15	---	.30***	.25***	.04	.13*	.15*	.00	.09
2. Self TDV – 16		---	.17**	.23***	.09	.29***	.19***	.10
3. Self TDV – 17			---	.19**	.08	.14*	.16**	-.07
4. Self TDV – 18				---	-.05	.13*	.14*	.16**
5. Peer TDV – 15					---	.23***	.23***	.09
6. Peer TDV – 16						---	.28***	.22***
7. Peer TDV – 17							---	.25***
8. Peer TDV – 18								---
<i>M</i>	.15	.15	.12	.13	.15	.19	.13	.16
<i>SD</i>	.54	.47	.52	.51	.35	.39	.34	.36

* $p < .05$,

Note: TDV = Teen dating violence.

100' < .001

'101' < .01

**

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript