Dating Violence Victimization and Borderline Personality Pathology: Temporal Associations From Late Adolescence to Early Adulthood

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Borderline personality pathology is a serious mental illness characterized by pervasive interpersonal deficits that onset during adolescence. Risk factors for borderline personality pathology include maladaptive interpersonal dynamics within attachment relationships. Given the shift toward emphasizing romantic relationships during adolescence as an important attachment relationship with implications for healthy development, the current study aimed to evaluate the longitudinal and reciprocal relations between victimization in dating relationships and borderline pathology in the transition from late adolescence to early adulthood. A large sample of high school daters ($N = 818$; 58% female; $M_{age} = 16.10$ years, $SD_{age} = .78$) were recruited to complete annual assessments of borderline personality features and dating violence victimization across 5 years. Results of a cross-lagged panel model revealed that primarily among girls, borderline features predicted increased levels of relational, psychological, and physical violence, whereas psychological and sexual violence predicted greater borderline features. The current findings provide the first evidence of a longitudinal association between victimization and borderline pathology in adolescence and suggest, particularly among girls, that interventions for borderline features have important implications for reducing dating violence victimization among adolescents and young adults.

Keywords: borderline personality disorder, dating violence victimization, adolescence, longitudinal, risk factor

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Borderline personality pathology is a serious mental illness characterized by affective, behavioral, and relational instability (Linehan, 1993). Though discrete "causes" of borderline pathology have not been identified, a number of risk factors have been suggested to contribute to its development. Major theories of the etiology of borderline pathology agree that an inborn, constitutional vulnerability interacts with what is referred to as a chronically invalidating environment. In a systematic review of studies, Stepp and colleagues (2016) found that family adversity and low socioeconomic status (SES), maternal psychopathology, affective parenting, and maltreatment are the most robust environmental predictors of borderline symptomology based on existing research. Due to the association between borderline pathology and attach-

ment insecurity (Agrawal, Gunderson, Holmes, & Lyons-Ruth, 2004), it is not surprising that research into risk factors has focused on the child's early caregiver relationships. However, attachment evolves further after childhood, and risk factors beyond the immediate family environment must be considered. Specifically, dating relationships in adolescence may represent an attachment relationship that is formative in the development, maintenance, or exacerbation of borderline pathology.

Up to 95% of U.S. teens report ever having dated by the age of 18 (Manning, Longmore, Copp, & Giordano, 2014), corresponding to the age that adults in the United States report having experienced their first episode of intimate partner violence (Breiding et al., 2014). A recent meta-analysis spanning multiple countries found the prevalence of physical violence victimization to be 21% among adolescents and sexual violence victimization to be 14% and 8% for girls and boys, respectively (Wincentak, Connolly, & Card, 2017). In the United States specifically, a 2013 Centers for Disease Control and Prevention study of high schoolers revealed that around one in five female and one and 10 male students were victimized by physical and/or sexual violence in the past year (Vagi, O'Malley Olsen, Basile, & Vivolo-Kantor, 2015), with higher rates reported for psychological victimization according to the National Longitudinal Study of Adolescent Health

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(Halpern, Oslak, Young, Martin, & Kupper, 2001). Although research has clearly demonstrated that dating violence victimization (DVV) is a risk factor for psychopathology during adolescence, research related to borderline pathology is less prevalent.

To date, there are only two studies conducted in adolescence that examine the role of DVV in relation to borderline pathology, both of which were conducted in the United States. One study found a positive association between borderline features and DVV in a large sample of high schoolers, with stronger relations among girls (Reuter, Sharp, Temple, & Babcock, 2015). Another study replicated the concurrent relations between borderline features and DVV in a sample of adolescent inpatients; in addition, inpatients with high levels of borderline features exhibited similar rates of self-harm regardless of their experiences of DVV, whereas among those with low levels of borderline features, the presence of victimization related to increased self-harm (Hatkevich, Mellick, Reuter, Temple, & Sharp, 2017). These findings suggest that the co-occurrence of even low levels of borderline features and DVV puts adolescents at risk for self-damaging behaviors. Although these studies provide an important first step in investigating the role of dating violence in borderline pathology, their cross-sectional nature prevents inferences about whether dating violence is truly a risk factor for borderline pathology. Further, they limit the investigation of more complex reciprocal relations between borderline pathology and dating violence. There has been much greater attention to the relations between borderline pathology and peer victimization and bullying, with findings from longitudinal studies generally converging on the fact that bullying increases risk for subsequent borderline pathology (Winsper, Hall, Strauss, & Wolke, 2017). A recent study conducted in Europe replicated this association; however, they found that only among girls was bullying associated with subsequent personality pathology, suggesting potential gender differences in the association between victimization and borderline pathology (Antila et al., 2017).

One of the limitations of cross-sectional designs to evaluate risk factors is the inability to determine temporal precedence. Various well-established correlates of borderline pathology are both longitudinal predictors and consequences of DVV. For instance, low self-esteem and maladaptive parent–child dynamics, correlates of borderline pathology, are robust predictors of victimization (Foshee, Benefield, Ennett, Bauman, & Suchindran, 2004). In addition, common comorbidities of borderline pathology including substance use, suicidal ideation, and depressive symptoms, are predicted by DVV (Exner-Cortens, Eckenrode, & Rothman, 2013). Therefore, although not tested previously, existing evidence suggests that the relation between borderline pathology and DVV may be reciprocal in nature. Specifically, adolescents with borderline features are likely to be experiencing maladaptive parent–child dynamics and low self-esteem, which is related to risk for being victimized by dating partners. Further, if victimization is present, existing borderline features are likely to be exacerbated. However, these relations must be parsed from stability of borderline pathology (Bornovalova, Hicks, Iacono, & McGue, 2009) and dating victimization (Foshee et al., 2004), which requires the use of longitudinal designs.

Despite limitations in design among adolescent studies, research conducted with adults provides some clues regarding the role of victimization in the development of borderline pathology in adolescents, especially given that interaction patterns within relationships are often established in adolescence (Bouchey & Furman, 2006). Although research that demonstrates general relationship dysfunction associated with borderline pathology (Daley, Burge, & Hammen, 2000) is more prevalent, there is evidence that borderline features are overrepresented among individuals who have been the victim of intimate partner violence (Pico-Alfonso, Echeburúa, & Martinez, 2008). Further, in a study by Maneta and colleagues (2013), both males' and females' borderline features were related to romantic partners' perpetration of violence against them. These authors suggested that individuals with borderline features may be more likely to choose partners prone to violence or that reactive and dysregulated behaviors may elicit aggressive responses from others. To be clear, victims are never to be blamed for their victimization; nevertheless, it is important to understand factors that contribute to violence.

Understanding the dynamics between borderline pathology and DVV during adolescence has potential value in improving our understanding of the development and maintenance of this disorder. Given that adolescent romantic relationships influence developmental tasks of adolescence such as identity and sexual development (Exner-Cortens, 2014), there may be a feedback loop in which dating victimization exacerbates the presence of borderline features. To this end, the current study examined temporal associations and lagged effects between borderline personality features and dating violence across late adolescence through young adulthood. As adolescents reduce their dependence on parents as exclusive attachment figures, they become more reliant on nonfamilial relations, especially peers and romantic partners (Scharf & Mayseless, 2007). Romantic relationships, in particular, have more distinct intensity than peers and therefore may be more salient (Collins, Welsh, & Furman, 2009). We expected to find reciprocal associations between borderline features and DVV such that greater borderline features would predict greater victimization and vice versa; however, we had no a priori hypotheses about the types of violence that may be related to borderline pathology. We also expected to find at least moderate autoregressive associations within each construct. Given that consequences of victimization differ depending on the form and severity of violence (Mechanic, Weaver, & Resick, 2008) and that the two previous studies conducted in adolescence utilized an overarching measure of DVV (Hatkevich et al., 2017; Reuter et al., 2015), we evaluated different forms of dating violence, although in the same model. Therefore, this is the first study to evaluate differential effects of various forms of dating violence on borderline pathology.

Method

Participants and Procedures

Participants were recruited from seven public schools representing five major school districts in a large and diverse metropolitan city in the United States as part of a longitudinal study (Temple, Shorey, Tortolero, Wolfe, & Stuart, 2013). The current sample is the same as that utilized in the previous study by Reuter and colleagues (2015). Study recruitment and assessment occurred during school hours in classes with mandated attendance. Assessments continued annually for 5 years. Participants completed postgraduation assessments via a web-based platform. All students present in the selected classes were eligible to participate, and

there was a response rate of 62%, with a final recruitment of $N = 1,042$. A total 34 subjects did not participate at any wave of the study. Other patterns of missing data are described in a following section.

For the purpose of including the same individuals across waves in the current study, only participants who reported having dated at each wave they participated in were included (excluding $n = 224$). This was determined based on responses to the question, "Please check the statement that best applies to you" as either "I have begun dating, going out with someone, or had a boyfriend/girlfriend" or "I have not yet begun dating or going out with someone" for Waves 1 to 3. From Waves 4 to 5, participants responded to the question "How many boyfriends/ girlfriends or dating partners have you had since the last survey?". Those who selected the response "I have not yet begun dating or going out with someone" or "I have never dated" were excluded. This rate of dating (78% of the 1,008 who participated in at least one wave) is consistent with previous reports of high schoolers in the United States; in 2013, Centers for Disease Control and Prevention found that 75% of female and 72.8% of male high schoolers reported dating in the past year (Vagi et al., 2015).

At the initial time point, the sample had a mean age of 16.10 years ($SD = .78$), was 58% female, and identified their race/ethnicity as Hispanic (32%), White/not Hispanic (31.3%), African American (27.1%), Asian/Pacific Islander (1.8%), and other/mixed race (7.7%). Analyses were conducted to determine whether the participants who were included in this study differed from the overall sample. Those who were excluded due to incomplete data (at all waves) were significantly older ($M_{age} = 16.44$, $SD_{age} = 0.86$) than those who were included, $M_{age} = 16.08$, $SD_{age} = 0.79$, $t(1,040) = -2.64$, $p = .008$; however, they did not differ in regard to gender, $\chi^2(1) = 0.13$, $p = .719$, or race, $\chi^2(4) = 5.54$, $p = .236$. Those who were excluded due to dating status did not differ in gender, $\chi^2(1) = 3.51$, $p = .061$, age, $t(1040) = -.71$, $p = .477$, or borderline personality features at all five waves, $ts(656-879) = -1.84-.53$, $ps = .066-.685$. However, those who were excluded based on dating status differed on race/ethnicity, $\chi^2(4) = 40.48$, $p < .001$, with the biggest discrepancy between rate of dating and expected rate being among those who identified as Asian or Pacific Islander (more likely to report not having dated across waves) and White/not Hispanic (less likely to report not having dated across waves).

The current study was approved by the appropriate institutional review board. Research staff presented the study to students and answered any questions, and take-home packets with study information and parental consent forms were sent home. Students who returned with parental consent provided assent and completed assessments during school hours. Participants were compensated with $10 (Years 1–3) and $20 (Years 4–5) gift cards for participating.

Measures

Borderline personality features. The 24-item Borderline Personality Feature Scale for Children (Crick, Murray–Close, & Woods, 2005) was used. The Borderline Personality Feature Scale for Children includes indicators of childhood borderline features such as affective instability, identity problems, negative relationships, and self-harm. Item responses are on a 5-point Likert scale ranging from *not true at all* to *always true*. Examples of items include "I get into trouble because I do things without thinking" and "I feel that there is something important missing about me, but I don't know what it is." Research supports the criterion and concurrent validity of both parent and child reports of the Borderline Personality Feature Scale (Chang, Sharp, & Ha, 2011; Sharp, Mosko, Chang, & Ha, 2011). In the current sample among girls and boys, respectively, Cronbach's α was .87 and .90 in Year 1, .88 and .89 in Year 2, .88 and .90 in Year 3, and .91 for both genders in Years 4 and 5.

Dating violence victimization. The Conflict in Adolescent Dating and Relationship Inventory (Wolfe et al., 2001) is a 50-item self-report measure assessing both dating violence perpetration and victimization across five domains: physical abuse, psychological and emotional verbal abuse, sexual abuse, threatening behavior, and relational aggression. Each question is divided into two parts, one that indicates perpetration (e.g., "I threw something at him/her") and one that indicates victimization ("He or she threw something at me"). Binary responses, in which participants reported whether or not they perpetrated and/or were victimized by an act during a conflict or argument with their boyfriend/girlfriend (or ex-boyfriend/ex-girlfriend) in the past year, were summed to create a total score for each form of violence. Due to the low prevalence of DVV, many previous studies have dichotomized measure of violence; however, there is evidence, based on other measures of dating violence (e.g., Conflict Tactics Scale 2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996), that using total scores created by summing the total number of acts within a specific scale is a close indication of a latent variable of violence severity. In addition, using total scores gives equal weight to all abusive acts, with endorsement of more acts indicating greater severity because the most severe acts are those least frequently endorsed (Goncy, Farrell, Sullivan, & Taylor, 2016). Furthermore, constraining the variability of any measure into a dichotomous variable is problematic due to the loss of statistical power.

Four subscales were used for the current study. First, a scale evaluating relational aggression (three items) evaluated the extent to which a romantic partner intruded and affected an individual's peer relationships ("He/she tried to turn my friends against me"). Among girls and boys, respectively, internal consistency was .67 and .63 in Year 1, .64 and .75 in Year 2, .69 and .75 in Year 3, .78 and .75 in Year 4, and .69 and .65 in Year 5. A scale evaluating psychological violence (10 items) included indices of emotional and verbal abuse ("He/she did something to try to make me jealous"). Among girls and boys, respectively, internal consistency was .81 and .77 in Year 1; .83 and .80 in Year 2, .85 and .85 in Year 3, .86 and .86 in Year 4, and .83 and .89 in Year 5. A scale evaluating physical violence (four items) assessed deliberate physical harm ("He/she threw something at me"). Among girls and boys, respectively, internal consistency was .79 and .58 in Year 1, .80 and .79 in Year 2, .82 and .73 in Year 3, .82 and .73 in Year 4, and .88 and .75 in Year 5. Finally, a scale consisting of four items assessed sexual abuse ("He/she touched me sexually when I didn't want them to"). Among girls and boys, respectively, internal consistency was .51 and .41 in Year 1, .44 and .41 in Year 2, .58 and .63 in Year 3, .69 and .44 in Year 4, and .69 and .66 in Year 5, which was notably less than the other scales.

Parent–child relationship quality. Four items assessed quality of mother and father relationships: "Do you feel close to your

mother/father" and "Do you share your thoughts and feelings with your mother/father" were rated on a 4-point Likert scale ranging from *very true* to *very false*. Responses were averaged for an index of relationship quality with each parent.

Data Analysis

Descriptive statistics were run using SPSS Version 25.0 (IBM Corp, 2016) to evaluate the prevalence of DVV and borderline features at each year of the study. Further, we examined the gender breakdown of these rates using independent sample *t* tests and Cohen's *d* as a measure of effect size. Bivariate correlations were run to evaluate associations between these variables across all years of the study. As is common in longitudinal data, missing data were prevalent, which is described in more detail in an online supplement table. There were 1,042 students enrolled into the study 1 year prior to the first wave of data collection. Only 531 (51%) of these students participated in all waves of the study, whereas 34 (3.3%) did not participate in any of the waves of data collection. Next to attrition, there was wave nonresponse (i.e., respondents in some but not all waves), which characterized 477 subjects (45.8%). We first evaluated missing data within each wave for assumptions of missing completely at random using Little's Missing Completely at Random test, which demonstrated that this assumption could be rejected at each wave. Next, we evaluated wave noncompletion and attrition across time by evaluating differences between the group of individuals who participated at all waves and those who had any wave missingness. Logistic regressions were used to evaluate whether key variables at each wave (entered simultaneously) predicted missingness across the whole study, with variables predicting participation at a significance level <.05 interpreted. In addition, we examined group differences in age, race, and gender to determine whether they differed between those who participated at all waves; those who did not participate at any waves, and those who did not complete some waves. Those who reported higher physical victimization at Wave 2 were .74 times more likely to participate in all waves, but those reporting higher sexual victimization at Wave 2 were 1.44 times more likely to participate in all waves. Those who participated at all waves were significantly younger than those who either missed all waves or participated in some waves, $F(2, 1041) = 8.43, p < .001$. There were a greater than expected proportion of girls participating in some waves, but less than expected proportion of girls participating in all waves, $\chi^2(2) = 37.90, p < .001$, and significant differences for completion based on race, $\chi^2(8) = 20.44, p = .009$.

Next, we utilized path analysis to examine relations between DVV and borderline features across 5 years. These analyses were conducted in MPlus Version 8.1 (Muthén & Muthén, 2017). With the exception of the measure of psychological violence, all measures of DVV were positively skewed with high kurtosis. Therefore, maximum likelihood estimation with robust standard errors was used to account for missing data due to attrition, which is based on the assumptions of data missing at random and enables use of all available data. Across all models, fit was evaluated based on values of the root mean square error of approximation (RMSEA; with values of less than .08 indicating reasonable fit and values above .10 suggesting poor fit; Browne & Cudeck, 1993), comparative fit index (CFI; with values between 0.95 and 1.00

indicating excellent fit and values between .90 and .95 indicating acceptable fit), and the standardized root mean square residual (SRMR; with values less than .08 indicating good fit, but with a large sample size and number of parameters, values less than .10 were considered acceptable; Kline, 2011).

The main path model evaluated the transactional relations between borderline features and all forms of dating violence across 5 years, with concurrent correlations between all constructs estimated at each time point, autoregressive relations modeled within each construct over time, and 1-year cross-lagged relations between each form of dating violence and borderline features (Figure 1). In addition, given the inclusion of all forms of dating violence in the same model, we included cross-lagged paths between certain types of dating violence that were justified given previous research. Specifically, within relationships, sexual violence is likely to be preceded by physical violence (Howard & Wang, 2005), which is likely preceded by verbal abuse or psychological violence (Giordano, Soto, Manning, & Longmore, 2010). Further, given the complexity of the model, autoregressive paths within constructs were held equal when doing so did not result in significantly worse model fit. We used a multigroup analysis for the model; to determine differential fit of models across genders, χ^2 difference test based on log likelihood values and scaling correction factors obtained with the maximum likelihood estimation with robust standard errors estimator was used to compare nested models. Gender differences in model fit were tested due to the fact that in previous research, adolescent girls have reported experiencing greater rates of sexual dating violence than boys (Howard & Wang, 2005) and are more likely to experience negative consequences of dating violence (Hamby, Sugarman, & Boney-McCoy, 2006). It has also been found that reporting of borderline features differs across genders (Sharp et al., 2014), with girls more easily endorsing self-harm and suicidality and affective instability and boys more easily endorsing anger and impulsivity (Aggen, Neale, Røysamb, Reichborn-Kjennerud, & Kendler, 2009; Hoertel, Peyre, Wall, Limosin, & Blanco, 2014; Sharp et al., 2014), although when examined in community samples, there are little to no mean level differences in reports of borderline features (Johnson et al., 2003). We also controlled for the effects of SES on DVV and quality of parental relationships on borderline features in the analyses. Previous research has found higher rates of DVV among samples from disadvantaged neighborhoods (Wincentak et al., 2017), and harsh parenting has been found to predict not only dating violence (Jouriles, McDonald, Mueller, & Grych, 2012) but also borderline personality disorder (BPD) features in adolescence (Stepp et al., 2014). However, given that borderline pathology is related to negative perceptions of parenting quality, there is the possibility that controlling for these variables may remove valid variance of borderline features. Therefore, we also tested the final model while removing this covariate and examined differences in results.

Results

Table 1 displays descriptive statistics for and correlations between main study variables at each time point of the study. Examining correlations across time within single constructs revealed that correlations across time for BPD were medium-to-strong (.41–.58 across one time lag and .38 for the longest time lag). A similar pattern was seen for psychological violence (.47–
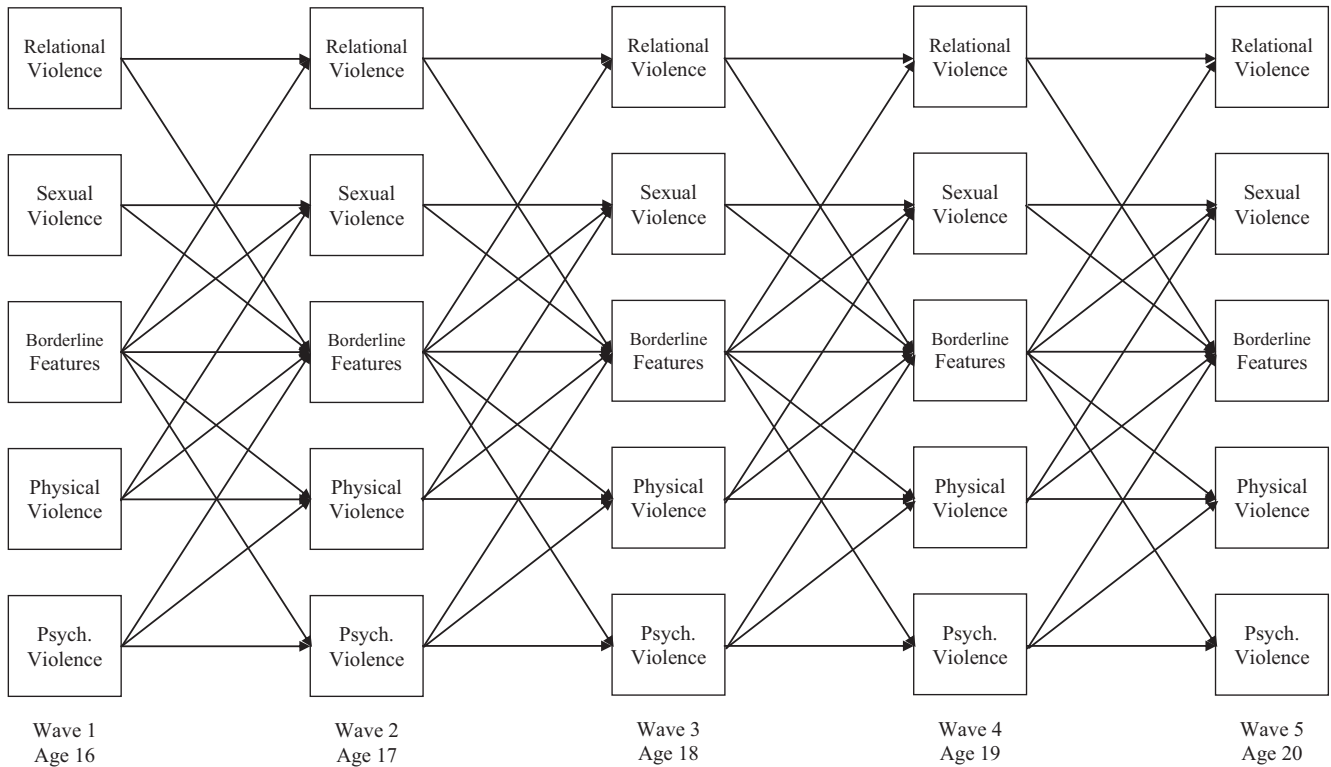
Figure 1. Conceptual model representing reciprocal relation between dating violence victimization and borderline pathology.

.52 for one time lag and .31 for the longest time lag). Sexual violence showed medium-sized correlations between scores 1 year apart. Interestingly, relational violence had the lowest magnitude of correlations across time (.13–.27 for one time lag and .02 for the longest time lag). Across constructs at the same wave, correlations were mostly small–to-medium in magnitude, with correlations between scores of relational violence and scores of physical and sexual violence being mostly small in magnitude. Similarly, correlations between borderline features scores and all forms of dating victimization were mostly small in magnitude.

Results from independent samples *t* tests demonstrated that girls reported higher levels of borderline features, at least for the first three waves of the study (Cohen's *d* ranging .22–.34). Although statistically significant, differences were small in magnitude. Girls, relative to boys, reported higher levels of psychological (Waves 1–4), physical (Wave 1), and sexual violence (Waves 1–4) perpetrated against them (Cohen's *d* ranging .18–.39), although, again, these differences were small in magnitude. Given the bidirectional nature of violent dating relationships, we tested whether levels of victimization matched levels of perpetration as measured with the Conflict in Adolescent Dating and Relationship Inventory. In comparing means, we found small differences on annual reports of relational and sexual violence, with minimal differences across other scales (Cohen's *d* for relational violence ranging .18–.31 for Waves 1–4 and .20–.23 for Waves 1, 2, and 4). These results are available from the first author upon request.

The majority of current or most recent dating relationships were reported to be heterosexual. Among girls, rates of reported same-

sex relationships were 3.8% at Wave 1, 5.4% in Wave 2, 5.6% in Wave 3, 4.5% in Wave 4, and 4.8% in Wave 5. Among boys, rates of reported same-sex relationships were 4.3% in Wave 1, 6% in Wave 2, 8.7% in Wave 3, 8.8% in Wave 4, and 9.1% in Wave 5. Independent samples *t* tests were conducted to evaluate whether those who reported being in a same-sex relationship differed in their levels of borderline features and DVV to determine whether this would be a potential confound. Among girls at Wave 1, those in a same-sex relationship reported higher level of borderline features, $t(401) = 2.31$, $p = .021$, $d = 0.64$, but were not different in reports of any form of DVV ($ts = 0.55$–0.87, p's > .05). Similarly, among boys, those in a same-sex relationship reported higher levels of borderline features, $t(299) = 2.62$, $p = .009$, $d = 0.85$, but did not differ in the amount of victimization reported, $ts = -0.29$ to -1.35, $ps > .05$. Because there were no differences between those in same-sex versus heterosexual relationships on rates of DVV, further analyses were conducted within the full sample.

To evaluate the longitudinal dynamics between borderline features and dating violence, we tested a cross-lagged panel model in which cross-lagged paths between borderline features and all forms of dating violence were estimated after accounting for autoregressive stability within each construct. Additionally, we estimated directional paths from psychological to physical violence at the subsequent year, and from physical violence to sexual violence at the subsequent year (Figure 1). First, we tested whether constraining all autoregressive paths to be equal within each construct would result in significant changes in fit, which was not the

Table 1
Descriptive Statistics for and Correlations Between Main Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1. BPF-1																									
2. BPF-2	0.58																								
3. BPF-3	0.50	0.55																							
4. BPF-4	0.30	0.38	0.41																						
5. BPF-5	0.38	0.39	0.45	0.43																					
6. Rel-1	0.14	0.09	0.06	0.01	0.04																				
7. Rel-2	0.15	0.13	0.08	0.03	0.05	.13																			
8. Rel-3	0.03	0.04	0.05	0.03	0.05	.07	0.24																		
9. Rel-4	0.12	0.11	0.11	0.10	0.10	.10	0.30	0.27																	
10. Rel-5	0.06	0.05	0.09	0.10	0.15	.02	0.19	0.05	0.24																
11. Psy-1	0.28	0.23	0.15	0.03	0.14	.33	0.17	0.05	0.11	0.06															
12. Psy-2	0.22	0.31	0.22	0.09	0.12	.13	0.32	0.24	0.22	0.05	0.49														
13. Psy-3	0.22	0.19	0.25	0.13	0.18	.12	0.15	0.35	0.14	0.14	0.38	0.47													
14. Psy-4	0.18	0.18	0.21	0.21	0.22	.04	0.16	0.15	0.40	0.20	0.31	0.41	0.48												
15. Psy-5	0.12	0.22	0.19	0.21	0.27	.06	0.10	0.11	0.13	0.36	0.31	0.34	0.15	0.16											
16. Phy-1	0.18	0.14	0.13	-0.05	0.10	.26	0.09	0.05	0.05	0.05	0.50	0.27	0.22	0.15	0.16										
17. Phy-2	0.05	0.15	0.12	0.05	0.07	.06	0.09	0.15	0.09	0.03	0.25	0.45	0.27	0.19	0.21	0.36									
18. Phy-3	0.13	0.15	0.18	0.02	0.05	.05	0.04	0.29	0.05	0.09	0.23	0.30	0.49	0.23	0.27	0.27	0.40								
19. Phy-4	0.16	0.11	0.15	0.16	0.14	.02	0.14	0.14	0.41	0.16	0.19	0.25	0.26	0.55	0.27	0.14	0.29	0.41							
20. Phy-5	0.08	0.08	0.10	0.11	0.15	.29	0.05	0.06	0.13	0.34	0.15	0.14	0.23	0.30	0.55	0.13	0.22	0.27	0.44						
21. Sex-1	0.17	0.10	0.05	-0.00	0.10	.11	0.18	0.14	0.08	0.06	0.41	0.24	0.19	0.14	0.21	0.43	0.20	0.21	0.15	0.16					
22. Sex-2	0.13	0.12	0.07	0.00	0.12	.08	0.05	0.11	0.19	0.11	0.19	0.34	0.19	0.21	0.20	0.16	0.26	0.19	0.17	0.07	0.34				
23. Sex-3	0.11	0.09	0.07	-0.03	0.15	.09	0.06	0.24	0.11	0.10	0.20	0.22	0.35	0.20	0.25	0.26	0.15	0.42	0.25	0.21	0.37	0.29			
24. Sex-4	0.16	0.12	0.09	0.08	0.13	.07	-0.03	0.14	0.24	0.09	0.23	0.21	0.24	0.37	0.21	0.28	0.13	0.29	0.38	0.19	0.40	0.36	0.46		
25. Sex-5	0.13	0.10	0.08	0.07		.21	0.18	0.07	0.04	0.27	0.16	0.12	0.16	0.18	0.39	0.21	0.10	0.12	0.11	0.42	0.25	0.15	0.29	0.37	
Female *M*	63.4	61.9	61.0	57.4	57.6	.20	.18	.18	.16	.11	3.66	3.70	3.61	3.36	3.19	.44	.43	.41	.38	.36	.29	.22	.26	.30	.27
SD	12.7	12.7	12.6	15.5	14.8	.60	.54	.52	.55	.41	2.82	2.96	3.10	3.10	2.85	.98	.98	.98	1.01	.89	.64	.55	.65	.75	.72
Male *M*	58.9	58.1	58.1	56.6	57.1	.21	.22	.23	.25	.18	2.42	2.63	3.02	2.81	3.01	.27	.35	.30	.34	.52	.12	.12	.15	.17	.25
SD	14.1	12.8	13.7	13.6	15.5	.58	.63	.61	.67	.55	2.63	2.96	3.06	2.95	3.18	.67	.88	.79	.87	1.11	.41	.41	.54	.50	.68
t	4.5**	3.8**	2.6*	0.6	0.4	.2	-1.0	-1.1	-1.6	-1.8	5.3**	3.0**	2.3*	2.0*	0.7	2.7**	1.2	1.5	0.4	-1.9	4.0**	2.5*	2.1*	2.2*	.3
Cohen's *d*	0.34	0.30	0.22	0.05	0.03	.01	-.07	-.09	-.14	-.14	.39	.23	.20	.18	.06	.21	.09	.12	.04	-.16	.30	.19	.18	.21	.02

Note. Correlations > |.08| were significant at a .05 level; correlations > |.11| were significant at a .01 level; all dating violence victimization scales measured with the Conflicts in Adolescent Dating Relationships: Rel = Relational Violence; Psy = Psychological Violence; Phy = Physical Violence; Sex = Sexual Violence. Values from independent samples *t* tests displayed examining mean differences between genders.
* $p < .05$. ** $p < .01$.

case, $\chi^2(30) = 37.78$, $p = .155$. Next, in a model in which all paths were set to be equal across gender, fit was good according to the RMSEA estimate, but poor according to other indicators, $\chi^2(628) = 1066.935$, $p < .001$; RMSEA = .041, 90% confidence interval (CI) [.037, .046], SRMR = .101, CFI = .883. Next, all paths were freed between genders, leading to adequate model fit across all indicators, $\chi^2(500) = 875.74$, $p < .001$, RMSEA = .042, 90% CI [.028, .048], SRMR = .090, CFI = .900. Model comparison test revealed that model fit improvement was statistically significant when allowing paths to differ between genders, $\chi^2(128) = 194.45$, $p < .001$. Cross-lagged path estimates for the nonconstrained model are displayed in Table 2.

First, in examining cross-lagged paths among girls, borderline features predicted higher reports of psychological violence at nearly every wave, whereas standardized effects were small (ranging from .12 to .14), and they seemed to increase over time. This hypothesis was tested by conducting a nested model comparison between a model with these three cross-lagged paths set to equivalence (base model; H0) compared with a model in which they were freed (alternative model; H1). Constraining these three cross-lagged paths to equivalence did not significantly change model fit, $\chi^2(2) = 0.41$, $p = .816$, and when examining the difference in estimates from Waves 1 to 2 with paths from Waves 3 to 4/Waves 4 to 5, these differences were not significantly different from zero. Borderline features at previous wave also predicted relational violence at Waves 2 and 4 and physical violence at Waves 2 and 3; although these effects also increased over time, differences were not significantly different from zero. When looking at cross-lagged paths predicting borderline features at subsequent waves, there were less significant findings. Wave 1 psychological violence and

Table 2
Estimates and Confidence Intervals for Cross-Lagged Paths From Panel Model

Path	Girls (n = 470)		Boys (n = 348)	
	Unstd. (SE)	SD [95% CI]	Unstd. (SE)	SD [95% CI]
W1 BPF → W2 Relational	0.01 (0.00)*	.15 [.01, .29]	0.00 (0.00)	.08 [−.05, .21]
→ W2 Psych.	0.03 (0.01)*	.12 [.01, .21]	0.01 (0.01)	.07 [−.02 .17]
→ W2 Physical	0.01 (0.00)	.06 [−.05, .17]	−0.01 (0.00)*	−.14 [−.26, −.03]
→ W2 Sexual	0.01 [0.00]	.11 [−.01, .22]	0.00 (0.00)	.01 [−.07, .09]
W1 Psych. → W2 Phys.	0.03 (0.02)*	.10 [.01, .19]	0.02 (0.02)	.05 [−.06, .16]
W1 Phys. → W2 Sex.	0.01 (0.04)	.01 [−.11, .14]	−0.04 (0.04)	−.06 [−.20, .08]
W2 BPF → W3 Relational	0.00 (0.00)	.00 [−.10, .10]	0.00 (0.00)	.05 [−.08, .18]
→ W3 Psych.	0.01 (0.01)	.02 [−.07, .12]	0.02 (0.01)	.08 [−.04, .19]
→ W3 Physical	0.01 (0.00)*	.10 [.01, .19]	0.00 (0.00)	.04 [−.08, .15]
→ W3 Sexual	0.00 (0.00]	.04 [−.04, .11]	0.00 (0.00)	.04 [−.06, .14]
W2 Psych. → W3 Phys.	0.02 (0.02)	.05 [−.04, .14]	0.03 (0.02)	.10 [−.02, .21]
W2 Phys. → W3 Sex.	0.06 (0.04)	.09 [−.01, .19]	−0.02 (0.04)	−.04 [−.17, .09]
W3 BPF → W4 Relational	0.01 (0.00)**	.16 [.06, .26]	0.01 (0.00)	.11 [−.05, .25]
→ W4 Psych.	0.03 (0.01)*	.13 [.03, .23]	0.02 (0.02)	.09 [−.06, .24]
→ W4 Physical	0.01 (0.01)*	.14 [.03, .26]	0.00 (0.01)	.07 [−.10, .23]
→ W4 Sexual	0.01 (0.00)	.09 [−.02, .19]	0.00 (0.00)	.01 [−.07, .19]
W3 Psych. → W4 Phys.	0.02 (0.02)	.04 [−.05, .13]	0.04 (0.02)	.12 [−.02, .27]
W3 Phys. → W4 Sex.	0.15 (0.06)*	.21 [−.12, .13]	0.04 (0.04)	.06 [−.07, .19]
W4 BPF → W5 Relational	0.00 (0.00)	.07 [−.04, .18]	0.01 (0.01)	.18 [−.04, .40]
→ W5 Psych.	0.02 (0.01)*	.12 [.02, .21]	0.04 (0.02)	.16 [−.00, .33]
→ W5 Physical	0.00 (0.00)	−.01 [−.11, .10]	0.01 (0.01)	.15 [−.02, .32]
→ W5 Sexual	0.00 (0.00)	.01 [−.09, .12]	0.01 (0.01)	.14 [−.04, .32]
W4 Psych. → W5 Phys.	0.01 (0.02)	.03 [−.07, .14]	0.07 (0.03)*	.20 [.05, .35]
W4 Phys. → W5 Sex.	0.00 (0.05)	.00 [−.12, .13]	−0.02 (0.04)	−.03 [−.14, .08]
W1 Relational → W2 BPF	−0.15 (0.96)	−.01 [−.10, .09]	−0.58 (1.13)	−.03 [−.12, .07]
W1 Psych. →	0.50 (0.24)*	.12 [.01, .22]	0.36 (0.30)	.07 [−.04, .17]
W1 Physical →	0.24 (0.61)	.02 [−.08, .11]	0.33 (1.09)	.02 [−.09, .12]
W1 Sexual →	−1.19 (0.87)	−.06 [−.15, .03]	−0.65 (1.47)	−.02 [−.11, .07]
W2 Relational → W3 BPF	0.23 (1.21)	.01 [−.09, .11]	0.12 (1.42)	.01 [−.13, .14]
W2 Psych. →	−0.22 (0.23)	−.05 [−.15, .05]	0.71 (0.36)*	.14 [.00, .28]
W2 Physical →	1.08 (0.79)	.08 [−.03, .19]	−0.85 (0.83)	−.06 [−.17, .05]
W2 Sexual →	−0.25 (1.55)	−.01 [−.14, .12]	0.32 (1.73)	.01 [−.10, .12]
W3 Relational → W4 BPF	2.57 (2.12)	.09 [−.05, .22]	−0.38 (1.74)	−.02 [−.17, .14]
W3 Psych. →	0.26 (0.29)	.05 [−.06, .16]	−0.14 (0.37)	−.03 [−.18, .12]
W3 Physical →	−0.66 (1.58)	−.04 [−.24, .16]	0.10 (1.25)	.01 [−.13, .14]
W3 Sexual →	−2.08 (1.50)	−.09 [−.21, .03]	−3.11 (1.94)	−.13 [−.28, .03]
W4 Relational → W5 BPF	1.64 (1.30)	.06 [−.03, .15]	−1.22 (1.69)	−.05 [−.19, .09]
W4 Psych. →	−0.05 (0.33)	−.01 [−.14, .12]	1.28 (0.50)*	.24 [.06, .42]
W4 Physical →	−0.21 (0.72)	−.01 [−.10, .08]	−1.33 (1.17)	−.07 [−.20, .05]
W4 Sexual →	2.52 (0.96)**	.12 [.03, .21]	−1.48 (2.12)	−.05 [−.17, .08]

Note. BPF = Borderline Personality Features Scale for Children; CI = confidence interval; Unstd. = unstandardized estimate; SE = standardized estimate; W1 = Wave 1; W2 = Wave 2; W3 = Wave 3; W4 = Wave 4; W5 = Wave 5.
* $p < .05$. ** $p < .01$.

Wave 4 sexual violence predicted increases in borderline features at subsequent waves, with small magnitude of effects.

The pattern of results regarding prediction of dating violence by previous levels of borderline features was not mirrored among boys. In fact, borderline features at Wave 1 predicted less physical violence at the subsequent wave. However, psychological violence was a significant predictor of subsequent borderline features at Waves 3 (standardized effect of .14) and 5 (standardized effect of .24). The difference in magnitude between these two effects was not significant from zero; however, they were significantly greater than the same effects among girls (psychological violence at Wave 2 predicting borderline features at Wave 3: unstandardized effect difference $= 0.92$, $SE = 0.42$, $p = .030$; psychological violence Wave 4 predicting borderline features at Wave 5: unstandardized effect difference $= 1.33$, $SE = 0.60$, $p = .025$).

Next, looking at autoregressive relations, paths largely mirrored what was found in correlational analysis; autoregressive paths for borderline features were moderate-to-strong (standardized effects of .44–.54 in girls and .44–.53 in boys), but for the most part were small-to-moderate for measures of DVV, a pattern that was consistent across genders. The exception to this were the autoregressive paths for sexual violence victimization, which ranged from .24 to .32 among girls and .39 to .63 among boys. Differences in these parameters between genders were statistically significant (unstandardized difference $= -0.26$, $SE = 0.09$, $p = .004$), suggesting that among boys, sexual violence demonstrates significantly stronger stability over time than it does among girls. Relational violence had the lowest magnitude of autoregressive paths across both genders (suggesting the lowest level of stability from midadolescence to early adulthood).

As an ancillary test, we fit the same model without controlling for the effects of parental relationship quality. Model fit was adequate across all indicators, $\chi^2(420) = 713.19$, $p < .001$, RM-SEA $= .048$ (90% CI [.042, .054]), SRMR $= .092$, CFI $= .905$. Path estimates are available from the first author upon request. On the whole, results were largely unchanged, with the exception of the cross-lagged paths from borderline features to subsequent levels of dating violence. Specifically, while removing parental relationship quality from the model led to the estimates of several paths to reduce in magnitude and no longer be significant among females (borderline predicting relational violence at Wave 2, physical violence at Wave 3 and 4, and psychological violence at Wave 5), parental relationship quality seemed to have a suppression effect for boys, such that removing it from the model led to an increase in magnitude of some of these cross-lagged effects, and the effect from borderline features to subsequent sexual dating violence at Wave 5 became statistically significant.

Discussion

In the first study to evaluate the concurrent associations and bidirectional lagged effects across time between DVV and borderline pathology from late adolescence to early adulthood, we emphasize three findings. First, from midadolescence into young adulthood, higher borderline features predicted increased likelihood of being victimized in a dating relationship among girls; however, this was not the case for boys. Second, for boys, we found that psychological violence predicted increases in subsequent borderline features, which was stronger than the parallel

effect among girls. Finally, of all forms of violence, psychological violence had the most robust associations with borderline personality features across genders. Altogether, these findings suggest that at least among girls, borderline features prospectively is linked to victimization in dating relationships, whereas DVV (particularly psychological violence) is a more robust risk factor for borderline pathology among boys. Together, although demonstrating small effect sizes, it appears that DVV is an important factor in the maintenance and exacerbation of borderline symptomatology for individuals transitioning from adolescence into young adulthood. This is particularly meaningful given that these effects were found even when controlling for stability of these constructs and potential confounds of parental relationship quality and SES.

Regarding our first finding, it is notable that the direction of prediction was largely characterized by borderline features predicting DVV among girls with only psychological violence at age 16 and sexual violence at age 19 predicting borderline features 1 year later. Overall, it appears that during middle to late adolescence, higher levels of borderline features put girls at risk for being victimized by psychological, relational, and physical aggression. This finding is interesting when evaluated alongside research demonstrating that individuals with BPD display greater hostility and aggression toward romantic partners when experiencing anxiety and avoidance (Critchfield, Levy, Clarkin, & Kernberg, 2008). It is possible that individuals with borderline features elicit aggressive and hostile behavior from romantic partners, consistent with the suggestions made by Maneta and colleagues (2013). In turn, although not as robust, victimization predicts increases in borderline symptomatology.

Direction of predictive relations are in line with a developmental cascade model that is best understood in the context of typical development. Developmental cascades refer to the dynamic interplay of multiple factors across development in which functioning in one domain impacts functioning in other areas. Further, timing of various processes within developmental cascades can provide important information regarding critical periods for intervention (Masten & Cicchetti, 2010). Adolescent intimate relationships contribute to psychological well-being by satisfying needs for identity and intimacy (Collins & Sroufe, 1999; Shulman & Knafo, 1997) during a developmental phase characterized by changes to the attachment systems (Scharf & Mayseless, 2007) and identity development (Kroger, 2006). Previous findings have shown that among girls, changes in borderline features across adolescence correspond to worsening social skills, increased sexual activity, and poor self-perception (Wright, Zalewski, Hallquist, Hipwell, & Stepp, 2016), thereby demonstrating that early borderline features are linked to psychosocial domains that may disrupt the process of healthy identity and personality development via instability in close relationships. Complementing these findings, the current study demonstrates directionality in these influences such that increased victimization may be a result of impaired interpersonal functioning in adolescents with borderline features. Further, it is possible that over time, persistence in victimization would lead to exacerbation of existing borderline personality pathology, as seen in the final waves of the study with sexual violence predicting increases in borderline personality features. Therefore, intervening in early disturbed interpersonal processes among adolescents with borderline features may be crucial to prevent escalation of disturbed relationship functioning.

Another surprising finding was the gender differences that emerged within the model. Although borderline features among girls largely predicted DVV in subsequent years, borderline features in boys predicted decreases in physical dating violence. Previous research has found that men with borderline personality pathology are more likely to demonstrate an explosive temperament and impulsive aggressiveness (Mancke, Bertsch, & Herpertz, 2015; Sansone & Sansone, 2011), which, in the context of romantic discord, may actually lead partners to withdraw rather than retaliate. Future research is needed to elaborate on these findings because they may not necessarily apply to same-sex relationships.

In terms of DVV acting as a risk factor for subsequent borderline features, effects were significantly stronger for psychological violence predicting increases in later borderline personality features in boys compared with girls. Previous research examining cortisol levels of patients with BPD has found that in response to psychosocial stress, male adults with BPD show increases in cortisol levels compared with female adults with BPD and male controls (Inoue et al., 2015). Together, these results suggest possible etiological differences in borderline personality pathology development based on gender. Alternatively, differences may be due to developmental timing (with interpersonal factors carrying stronger risk for borderline features among women earlier in development; Roeder et al., 2014). In fact, previous research has found that although both DVV and borderline features are equally distributed across women and men (for borderline pathology, specifically in community samples; Johnson et al., 2003; Kimmel, 2002), prevalence of victimization is higher among female patients with BPD compared with male patients (Bohle & Vogel, 2017). Given that previous research on risk factors for borderline personality pathology tends to not explicitly model gender differences or includes female-only samples, future research should focus on understanding potential sex-specific trajectories of borderline personality pathology.

No a priori hypotheses were made regarding the forms of violence that may be associated with borderline personality pathology. Results suggested that psychological violence had the most robust associations with borderline personality features, both as a predictor and as a consequence. This was not surprising given that theories of BPD emphasize the centrality of emotional invalidation in perpetuating aspects of the disorder (Linehan, 1993). In addition, it has been found that borderline features in adolescence is related to psychological control and guilt induction by parents (Vanwoerden, Kalpakci, & Sharp, 2017). However, it has been suggested that psychological violence such as yelling or swearing at a partner may represent a less severe dimension of dating violence when potential for harm is not expected (Cascardi, Blank, & Dodani, 2016). Therefore, the lack of findings for the more severe forms of violence may be due to overall lower prevalence of sexual and physical violence in the current sample.

The current study has several strengths that contribute to research regarding risk for the development and maintenance of borderline personality pathology. First, using a longitudinal design with several assessment points allows us to evaluate more dynamic associations across a critical developmental period. In addition, given noted gender differences in developmental mechanisms of borderline personality pathology (Johnson et al., 2003), testing gender differences in the overall model allows for greater specificity in our understanding of these associations. Finally, the use of

a large, ethnically and geographically diverse community sample increases external validity of the findings.

Despite these implications, several limitations must be noted. First, our study relied solely on self-report, which limits the generalizability of findings. It is a well-established finding that borderline personality pathology is associated with distorted interpersonal perception characterized by hypersensitivity to rejection (Lazarus, Cheavens, Festa, & Zachary Rosenthal, 2014); therefore, dyadic reports of conflicts in dating relationships may allow for greater confidence in findings. In addition, we utilized manifest variables, rather than using SEM, to estimate models using latent variables. Future research should utilize these methods to account for measurement error and to demonstrate measurement invariance of these constructs over time. Second, although we controlled for quality of the parental relationship, we did not consider child abuse or neglect. Previous research has found that victimization by parents predicts greater victimization by intimate partners in adolescence (Foshee et al., 2004). Further, when removing parental relationship quality as a covariate in our model, results were somewhat altered, but altered differently by gender. Future research is needed to unpack the complex dynamics between maladaptive parent–child dynamics and subsequent child–peer/romantic partner dynamics that are related to borderline pathology, and how this may differ by gender. Finally, it is unclear whether victimization as a risk factor for borderline pathology is exclusive within dating relationships. There has been a research finding that victimization by peers represents risk for borderline pathology in adolescence (Kawabata, Youngblood, & Hamaguchi, 2014). Therefore, future research should investigate whether these effects are unique to dating relationships or are representative of close interpersonal relationships.

The current study strengthens previous suggestions that DVV is a risk factor for borderline pathology. Further, it provides evidence that borderline features in adolescence may increase the likelihood of being victimized. This has important health policy implications; there are several programs that have been developed to eliminate dating violence in adolescents, including school-based programs promoting healthy relationships (Fourth R Program; Wolfe et al., 2009), primary and secondary dating violence prevention programs that address beliefs and norms of dating violence and behavioral strategies for those engaged in dating violence (Safe Dates; Foshee et al., 2005), and interventions that combine classroom- and school-level programs (Shifting Boundaries; Taylor, Mumford, & Stein, 2015). These interventions may benefit from incorporating interventions for borderline personality pathology. Fostering interpersonal skills early in adolescence may assist not only in decreasing rates of dating violence but also in preventing the development of borderline personality pathology.

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