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Patterns of adolescent aggression and victimization: Sex differences and correlates

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Abstract

This study identified heterogeneous patterns of peer and dating aggression and victimization among boys and girls and examined their relation to risk and protective correlates. Girls (n=1648) and boys (n=1420) in grades 8–10 completed surveys assessing 14 indicators of violence involvement. Latent class analyses indicated a four-class solution, though a test of measurement invariance indicated the nature of the classes differed by sex. Among boys and girls, three classes emerged: *Uninvolved* (45% of girls, 61% of boys), *Peer Aggressor-Victims* (23% of girls, 21% of boys), and *Cross-Context Aggressor-Victims* (12% of girls, 5% of boys). Those in the *Peer Aggressor-Victims* class were likely to report involvement in peer aggression only; however, girls in this class were likely to be involved only in moderate violence, whereas boys were likely to be involved in moderate and severe violence. Those in the *Cross-Context Aggressor-Victims* class were likely to report involvement in all forms of violence except sexual and controlling aggression, which was likely only among boys. Among girls, but not boys, a *Verbal Dating Aggressor-Victims* class (21% of girls) emerged that was characterized by involvement in occasional verbal dating aggression only. Among boys, but not girls, a *Cross-Context Physical Victims* class (13% of boys) emerged that was characterized by being only a victim of moderate physical peer and dating violence. Unique and shared risk and protective factors distinguished class membership for girls and boys. Findings suggest the pathways leading to violence may differ by sex and result in different patterns of violence involvement.

Keywords

Typologies; dating violence; peer violence; latent class analysis; sex differences

Introduction

Involvement in violence with peers (i.e. peer violence) and dating partners (i.e. dating violence) during adolescence is prevalent (Haynie et al., 2013; Kann et al., 2016) and results in negative health and developmental outcomes for victims and perpetrators during adolescence and young adulthood (Chen, Reyes, & Foshee, 2016; Moore et al. 2017). While

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considerable progress has been made in understanding the etiology of peer and dating violence, relatively little research has examined these behaviors from a typological perspective. This perspective posits the existence of subgroups or classes of individuals characterized by distinct patterns of violence involvement that have different causal origins and sequelae. Identifying patterns of violence involvement and their correlates is important for developing tailored prevention programming that may be more effective than a one-size-fits all approach (Reidy et al., 2016). To this end, the current study: 1) used latent class analyses, a person-centered analytic approach, to identify patterns of violence based on adolescent experience and use of moderate and severe physical peer and dating violence, as well as verbal, sexual, and controlling dating violence, and 2) examined associations between violence patterns and risk and protective correlates.

Violence Typologies

Three of the most influential violence typologies include the bully-victim typology (Haynie et al., 2001; Pelligrini, 1998), the perpetrator typology proposed by Holtzworth-Munroe and Stuart (1994), and the control-based typology proposed by Johnson (1995). The bully-victim typology classifies individuals as *bullies*, *victims*, or *bully-victims*. These groups are thought to differ in their socialization histories and motives for violence involvement. For example, whereas bullies are thought to engage in aggression that is instrumental or goal-oriented, bully-victims are thought to engage in reactive aggression (Pelligrini, 1998). The Holtzworth-Munroe and Stuart (1994) typology distinguishes three types of aggressors: (1) *generally violent-antisocial* perpetrators, who engage in severe forms of partner violence as well as aggression towards peers and others, (2) *borderline-dysphoric* perpetrators, who engage in severe forms of violence towards partners, but not others, due to traumatic experiences that lead to insecure attachment and relationship dependency, and (3) *family-only* perpetrators, who sporadically engage in moderate forms of partner violence due to a combination of stress with low level risk factors. Johnson (1995) articulated a partner violence typology focused on the motivation and nature of the violence itself, and originally proposed two types of partner violence: (1) *patriarchal (or intimate) terrorism*, which was described as being perpetrated primarily by men, characterized by escalating frequency and severity, and embedded in a pattern of coercive control and, (2) *common-couple violence*, which is bi-directional, relatively less frequent and less severe, and not embedded in a pattern of coercive control.

These perspectives, and others, suggest that victim-perpetrator overlap, generality (i.e., whether violence occurs in peer and/or dating contexts), and violence severity are important dimensions to consider in distinguishing patterns of involvement. However, whereas a growing body of research has drawn from these perspectives to examine patterns of peer (e.g., Haynie et al., 2001) and dating (e.g., Reidy et al., 2016) violence separately, relatively little research has examined patterns of involvement in dating *and* peer violence during adolescence, a critical developmental period when romantic relationships become increasingly salient and patterns of involvement in peer violence may generalize into dating relationships. To our knowledge, only two studies have used person-centered approaches to examine patterns of violence involvement using indicators that tap into generality *and* severity (Whiteside et al., 2013; Bossarte, Simon, & Swahn, 2008). Whiteside et al. (2013)

identified three patterns of physical aggression in youth: (1) cross-context (i.e., involvement in peer and dating aggression) aggressor-victims, (2) peer aggressor-victims and (3) peer aggressors. Youth involved in cross-contextual violence were more likely to misuse alcohol and use marijuana and report lower levels of parental monitoring and higher levels of friend delinquency and family conflict (Whiteside et al., 2013) than the other two groups. In a study of high-risk youth, Bossarte et al. (2008) identified five patterns; two of which map on to patterns 1 and 2 identified by Whiteside et al. (2013) and three of which were unique to their study: cross-context psychological aggressor-victims, dating violence aggressor-victims, and uninvolved. Cross-context aggressor victims involved in both physical and psychological forms of violence were more likely to report engaging in concurrent delinquent behavior compared to those in other groups.

Overall, findings from this emerging body of research suggest the existence of qualitatively distinct patterns of adolescent violence involvement. Further, both theory and empirical findings suggest that individual (e.g., substance use behavior), family (e.g., family violence), and peer (e.g., peer delinquency) socialization factors may lead to involvement in different patterns of violence behavior (Bossarte et al. 2008; Haynie et al., 2001; Holtworth-Munroe & Stuart, 1994; Pelligrini, 1998; Whiteside et al. 2013). However, numerous methodological issues limit the extent to which we can interpret and generalize the findings of extant studies. In particular, only the two studies described above considered generality and severity when distinguishing patterns; however, both studies used high risk samples, limiting generalizability. Further, only the Bossarte et al. (2008) study examined indicators of both physical and psychological violence and neither study examined controlling behavior or involvement in sexual violence. These are important limitations given that controlling behavior, in particular, is of key theoretical importance in distinguishing the patterns of violence proposed by Johnson's (1995) control-based typology. In addition, involvement in sexual violence-either as a victim or a perpetrator-has consistently been found to differ for boys and girls; specifically, numerous studies have found that, compared to girls, boys are more likely to perpetrate and less likely to experience sexual violence (for a review, see Chen et al., 2016). Thus, sexual dating violence may be a key indicator differentiating patterns of violence involvement among boys and girls.

Relatedly, although both of the aforementioned studies examined whether the likelihood of being involved in a particular pattern of violence differed for boys compared to girls, interpretation of these findings is complicated by the fact that neither study determined whether the *nature* of the patterns best characterizing violence involvement was the same or different for girls and boys (i.e., they did not establish measurement invariance). Examining measurement invariance by sex is a necessary first step that should be undertaken prior to examining any sex differences in group (i.e., pattern) membership because, as noted by Collins and Lanza (2010), where measurement invariance does not hold, comparisons of prevalence rates "...take[s] on more of an "apples-to-oranges flavor" (p. 126).

The Current Study

The primary aim of the current study was to use latent class analysis (LCA) to identify and characterize prototypical patterns of involvement in peer and dating violence among a

diverse sample of adolescent boys and girls, considering the important dimensions of victim-perpetrator overlap, generality, severity, and multiple forms of violence. LCA is a person-centered methodological approach that identifies distinct subgroups (or classes) of individuals who are similar to each other within a group, but differ from members of other groups, in terms of their configuration (or pattern) of values across a set of variables. Based on previous research (Bossarte et al., 2008; Whiteside et al., 2013), we anticipated identifying at least three distinct patterns: (1) uninvolved, (2) peer-only aggressor-victims, and (3) cross-context aggressor-victims. We also hypothesized that the nature of these patterns would differ for boys and girls. In particular, drawing from empirical research, we expected that, among boys, the cross-context aggressor-victim pattern would be characterized by high probabilities of endorsing all violence indicators except sexual violence *victimization* whereas, among girls, this pattern would be characterized by high probabilities of endorsing all indicators except sexual violence *perpetration*. Further, drawing from Johnson's (1995) control-based typology, which suggests that severe aggression among males is driven by motives of power and control, we expected that among boys, but not girls, the cross-context aggressor-victim pattern would be characterized by frequent use of controlling behavior with dating partners.

A secondary aim was to explore associations between violence pattern membership and individual, family, and peer, risk and protective factors. In particular, we examine five risk factors that are theoretical correlates of violence typologies: family violence exposure, delinquency among peers, impulsivity, anger, and heavy alcohol use. We also examined three protective factors that were conceptualized from a social control perspective as factors that may constrain violence. Social control theory posits that a tendency towards deviance and antisocial behavior is universal, but that conventional controls, such as bonding to prosocial individuals and institutions, can constrain such involvement (Hirschi, 1969). Protective factors conceptualized from this perspective include: individual prosocial beliefs, parental monitoring, and prosocial beliefs among peers. Drawing from theory and previous research, our general hypothesis is that, for both boys and girls, greater scores on risk factors will be positively and greater scores on protective factors negatively associated with the likelihood of being a cross-context aggressor-victim compared to other patterns of violence involvement.

Methods

Data are from a study of youth health risk behaviors that was conducted in all public schools in three nonmetropolitan counties in North Carolina. All adolescents in public schools in the participating counties who were in grades 8, 9 and 10, were able to complete the survey in English, and who were not in special education programs were eligible to participate. Parents had the opportunity to refuse consent for their child's participation by returning a written form or by calling a toll-free telephone number. Adolescent assent was obtained from teens whose parents had consented immediately prior to the survey administration. Data collectors administered the questionnaires in classrooms on at least two occasions to reduce the effect of absenteeism on response rates. The Institutional Review Board for the School of Public Health at the University of North Carolina at Chapel Hill approved the data collection protocols.

Out of a total of 6342 students who were eligible to participate in the study, 5016 (79%) completed a survey. Non-participation was due to: (1) parental declination of consent (6%), (2) adolescent declination of assent (7%), and absenteeism on days of data collection (7%). We restricted the sample to participants who reported having dated ($n=3109$) and who were not missing data on sex ($n=1$) or across all of the violence aggression/victimization indicators ($n=40$; 1% of the sample of daters), yielding a final analytic sample of $n=3068$. The sample is 46% female; 58% white, 31% black and 11% of another race/ethnicity; 33% of participants were in grade 8, 35% in grade 9 and 32% in grade 10; 26% reported that the highest level of education obtained by either parent was high school or less.

Measures

Fourteen categorical violence indicators—(described below) were created for use in analysis identifying patterns of involvement in peer and dating aggression and victimization.

Peer aggression/victimization.—Involvement in physical peer aggression was assessed using a short version of the Safe Dates Dating Abuse Scale (Foshee, 1996) that was modified to refer to peer rather than dating aggression. Adolescents were asked, “In the past three months, how many times did you do each of the following things to someone about the same age as you that you were not dating?” A parallel question asked about victimization. Three items were listed that assessed acts of moderate aggression (“pushed, dragged, shoved, or kicked,” “slapped or scratched,” and “physically twisted their arm”) and three assessed acts of severe aggression (“hit them with a fist or something else hard,” “beat them up,” and “assaulted them with a knife or gun”), with parallel items assessing victimization. Response categories for the items ranged from zero (0) to ten times or more (4). Due to low variability, scores for items indexing moderate and severe aggression and victimization were summed and then dichotomized to create 4 binary indicators (moderate peer aggression and victimization; severe peer aggression and victimization); for each indicator 0 indicated no involvement and 1 indicated at least one act of violence.

Dating aggression/victimization.—Involvement in dating aggression was also assessed using a short version of the Safe Dates Dating Abuse Scale (Foshee, 1996). Adolescents were asked, “During the past three months, how many times did you do each of the following things to someone you were dating or on a date with?” A parallel question assessed victimization. Adolescents were further instructed not to include acts that were perpetrated “in self-defense or play.” *Moderate and severe physical dating aggression/victimization* were assessed using the same behavioral items as for peer aggression and coded the same way (four indicators total). In addition, the scale included two items assessing *sexual aggression/victimization* (“forced you to have sex”, “forced you to do something sexual that you did not want to do”); three items assessing *verbal aggression/victimization* (“said something to hurt their feelings,” “insulted them in front of others,” “threatened to hurt you”) and two items assessed *controlling aggression/victimization* (“would not let you do things with other people,” “made you describe where you were every minute of the day”). Indicators of involvement in sexual dating aggression and victimization were created by summing scores and dichotomizing such that 0 indicated no involvement and 1 indicated involvement in at least one act of sexual aggression/victimization in the past

three months (two indicators). Due to greater variability in scores, we created indicators of involvement in verbal and controlling aggression such that those endorsing no acts were given a score of “0” (no involvement); those who endorsed any act of that form of aggression 1–2 times were given a score of “1” (occasional involvement), and individuals who endorsed any act of that form of aggression 3 or more times were given a score of “2” (frequent involvement). Indicators were created for each form (verbal and controlling) of dating violence with parallel indicators denoting aggression and victimization (four indicators total).

Individual, family, and peer risk and protective factors.—*Individual factors.* Degree of *impulsivity* was assessed by averaging scores on three items ($\alpha=.84$) drawn from the Grasmick et al. (1993) self-control scale (e.g., “excitement and adventure are more important to me than security”). *Anger* was assessed by averaging scores on three items ($\alpha=.88$) assessing how often the respondent had felt “mad,” “angry” and “furious” in the past three months (Zuckerman & Lubin, 1985). *Heavy alcohol use* was assessed by four items ($\alpha=0.94$) adapted from the Monitoring the Future study (Johnston, O’Malley, Miech, Bachman, & Schulenberg, 2016) that asked how many times in the past three months the respondent had: three or four drinks in a row, 4–5 drinks in a row, gotten drunk or very high from drinking alcohol, or been hung over. Responses were dichotomized such that a 1 indicated involvement in at least one act of heavy alcohol use and 0 indicated no involvement. Degree of *social bonding* was measured by averaging scores on six items ($\alpha=0.78$) assessing endorsement of conventional beliefs (e.g., it is good to be honest) and commitment to prosocial values (e.g., it is important to finish high school). *Family context.* Exposure to *family violence* was assessed by averaging scores ($\alpha=.85$) on three items from Bloom (1985) assessing how strongly respondents agreed or disagreed with the following statements: we fight a lot in our family; family members sometimes get so angry they throw things; and family members sometimes hit each other. *Parental monitoring* was assessed by three items from a scale assessing parental demandingness (e.g., “she/he has rules that I must follow”; Jackson, Henriksen, & Foshee, 1998) that were averaged across reports for maternal and paternal caregivers ($\alpha=.87$). *Peer context.* Adolescents identified up to five friends using a social network identification number from a student roster. Because respondents’ friends in school were included in data collection, friends’ reports of their own behaviors and attitudes were used to create the peer context variables. The use of sociometric methods enabled us to eliminate the possibility of a false consensus effect that can occur when adolescent perceptions are used to measure friends’ behaviors and attitudes (Prinstein & Wang, 2005). *Peer delinquency* was assessed by four items ($\alpha=.82$) from the delinquency subscale of the Problem Behavior Frequency Scale (Farrell, King, White, & Valois, 2000) that assessed the frequency with which respondents had engaged in different delinquent acts (e.g., skipped school); items were adapted to refer to acts that occurred in the past three months. Scores were averaged across nominated friends to create a composite measure of peer delinquency. *Peer prosocial beliefs* were assessed using the same six items used to assess individual social bonding that were described above. Scores were averaged across nominated friends to create a composite measure of peer prosocial beliefs.

Analytic Strategy—We conducted a series of latent class analyses using the Mplus software package (version 7.4; Muthén & Muthén, 2015) to identify respondents with similar patterns of responses across the 14 violence indicators. The model produces two sets of parameter estimates: (a) the latent class membership probabilities, which reflect the prevalence of each pattern and (b) the item-response probabilities, which denote the probability of endorsing a particular item (e.g., moderate physical DV victimization), given membership in a particular class. The item response probabilities express the correspondence between each observed violence indicator and each class with higher (or lower) probabilities indicating a defining characteristic of the violence class. Following the recommendations of Collins and Lanza (2010) for establishing measurement invariance across groups, we first identified the optimal number of classes separately for girls (n=1648) and boys (n=1420) by comparing models with increasing number of classes across a number of different statistical fit indices including: the Bayesian information criterion (BIC), the Young-Lo-Mendel-Rubin likelihood ratio test (VLMR-LRT) and the Lo-Mendel-Rubin adjusted likelihood ratio test (LMR-aLRT). **The best-fitting most parsimonious models are those that minimize the BIC and for which adding an additional class does not result in a significant increase in model fit as indicated by a p-value of greater than .05 for the VLMR-LRT and LMR-aLRT.** We also evaluated classification quality, as indicated by entropy scores and considered the substantive interpretation of the class profiles (Collins & Lanza, 2010).

After determining the best-fitting model for boys and girls, we examined measurement invariance by assessing whether there were sex differences in the item response probabilities (i.e., the measurement parameters) using a multiple group approach. Specifically, we used a likelihood ratio test to compare the fit of models in which parameters were allowed to vary by sex fit to a model in which parameters were constrained to be equal for boys and girls. We used a three-step approach to examine associations between latent class membership and risk and protective factors while controlling for demographic factors including race/ethnicity, parent education, and grade-level. This approach allows for inclusion of covariates into the LCA model using a three-step estimation process that accounts for measurement error due to uncertainty of class classification (Asporouhov & Muthén, 2014). Missing data on the latent class indicators was dealt with using full information maximum likelihood. Missing data on covariates was dealt with using a modified joint likelihood approach that retains all cases under missing at random assumptions (Sterba, 2014). A multivariate approach was used such that all risk/protective factors were modeled simultaneously, allowing us to identify unique associations between each factor and class membership, independent of the other variables in the model.

Results

Table 1 presents descriptive statistics for each of the violence indicators. Overall prevalence rates for the violence indicators ranged from 4% to 33% for perpetration indicators and from 5% to 36% for victimization indicators. Girls were more likely than boys to report engaging in moderate physical peer and dating aggression, severe physical dating aggression, occasional and frequent verbal dating aggression and occasional controlling aggression. Girls were also more likely than boys to report occasional and frequent verbal and

controlling dating abuse victimization. In contrast, boys were more likely than girls to report engaging in severe physical peer aggression and sexual dating aggression. Boys were also more likely than girls to report experiencing (i.e., being victims of) severe physical peer and dating violence.

A series of latent class models was estimated for boys and girls that ranged from one to five classes. Fit indices for these models are shown in Table 2. For both boys and girls, the BIC decreased as the number of classes increased, although decreases leveled off as the number of classes increased from four to five. For both groups, the VLMR-LRT and LMR-aLRT favored a four-class solution, as this was the greatest number of classes for which this test was statistically significant, and the four-class solution for both groups was clearly interpretable based on the item response probability patterns. Thus, based on the VLMR-LRT and LMR-aLRT and the criteria of parsimony and interpretability we selected the four-class model for both boys and girls. The four-class models for both girls and boys had high classification quality (entropy and all average classification probability values > .80 for both groups), indicating reliable classification. The test of measurement invariance by sex was highly significant, indicating that one or more of the item response probabilities in the four-class model differed significantly by sex ($G^2 = 415.76$, $df=56$, $p<.001$) and suggesting that the nature of the latent classes differed for girls and boys. Following the recommendations of Collins and Lanza (2010) for dealing with measurement non-invariance, we proceeded with all further analyses stratified by sex.

The Four-Class Model for Girls and Boys

Parameter estimates including latent class prevalences and item-response probabilities for the four-class models for boys and girls are presented in Table 3. Among boys and girls, three classes emerged that were as hypothesized and were labeled as: *Uninvolved* (45% of girls, 61% of boys), *Peer Aggressor-Victims* (23% of girls, 21% of boys), and *Cross-Context Aggressor-Victims* (12% of girls, 5% of boys). Boys and girls classified as *Uninvolved* had a very low likelihood of endorsing involvement in any form of peer or dating aggression or victimization (all item response probabilities < .10). Boys and girls classified in the *Peer Aggressor-Victims* class were likely (item response probabilities > .50) to report involvement in peer aggression only; however, unexpectedly, girls in this class were likely to engage in and experience moderate physical peer aggression only, whereas boys in this class were likely to engage in and experience both moderate and severe physical peer aggression. Consistent with expectations, among boys, the *Cross-Context Aggressor Victims* class was characterized by a high likelihood of involvement in all forms of aggression, including sexual and frequent controlling aggression, whereas among girls, this class was characterized by a high likelihood of engaging in all forms of aggression *except* for sexual and controlling aggression. Among girls, but not boys, a *Verbal Dating Aggressor-Victims* class emerged that was characterized by involvement in occasional verbal dating aggression and victimization only (21% of girls). Among boys, but not girls, a *Cross-Context Physical Victims* (13% of boys) class was identified that was characterized by high probabilities of moderate physical peer and dating violence victimization only.

Risk and Protective Factors Distinguishing Class Membership

Parameter estimates from the multinomial regression models linking risk and protective factors to class membership among girls and boys are presented respectively in Tables 4 and 5. All possible comparisons between classes are shown (6 total) with the class of interest specified in each row and the reference class (i.e., the comparison class) specified in the table column. **Our general hypothesis was that greater scores on risk factors would be positively and greater scores on protective factors negatively associated with being in the cross-context aggressor-victim class (CCAV) vs. the other classes.** As such, the uppermost section of Tables 4 and 5 reports comparisons between the CCAV class and each of the other classes (reference classes). The middle and bottom sections respectively provide remaining comparisons among the classes.

Risk and Protective Factors Distinguishing Class Membership among Girls

Distinguishing the Cross-Context Aggressor-Victims (CCAV) class.—Consistent with our general study hypothesis, across all comparisons, higher levels of anger and family violence were associated with significantly increased and greater social bonding with significantly decreased likelihood of membership in the CCAV class among girls. Greater impulsivity was also associated with increased likelihood of being in the CCAV class among girls, though the association was only marginal in the comparison with the *Peer Aggressor-Victims* class. Heavy alcohol use was associated with increased likelihood of being in the CCAV vs. the *Uninvolved* class but did not distinguish girls in the CCAV class from those in the *Peer Aggressor-Victims* or *Verbal Dating Aggressor-Victims* classes. Contrary to expectations, parental monitoring, peer delinquency, and peer prosocial beliefs were not associated with CCAV class membership.

Distinguishing Peer Aggressor-Victims and Verbal Dating Aggressor-Victims.

—Greater impulsivity, anger, and family violence were each associated with increased odds of being in the *Peer Aggressor-Victims* class vs. the *Uninvolved* class among girls. Impulsivity and anger also distinguished the *Verbal Dating Aggressor-Victims* from the *Uninvolved* class. None of the risk and protective factors significantly distinguished girls who were members of the *Peer Aggressor-Victims* class from those in the *Verbal Dating Aggressor-Victims* class.

Associations between Risk and Protective Factors and Class Membership among Boys

Distinguishing the Cross-Context Aggressor-Victims (CCAV) class.—Among boys, consistent with expectations, higher levels of alcohol use and family violence were associated with significantly increased odds of membership in the CCAV class compared to each of the other classes. Greater social bonding was associated with decreased odds of membership in the CCAV class compared to the *Uninvolved* and *Peer Aggressor-Victims* classes but did not distinguish boys in the CCAV from those in the *Cross-Context Physical Victims* class. Greater parental monitoring was also associated with decreased likelihood of being in the CCAV class compared to the *Uninvolved* and *Cross-Context Physical Victims* classes but did not distinguish boys in the CCAV from those in the *Peer Aggressor-Victims* class.

Distinguishing Peer Aggressor-Victims and Cross-Context Physical Victims.—

Among boys, greater anger was associated with significantly increased and greater parental monitoring with significantly decreased odds of being in the *Peer Aggressor-Victims* class compared to the *Uninvolved* class. None of the risk or protective factors distinguished boys in the *Peer Aggressor-Victims* class from those in the *Cross-Context Physical Victims* class. Anger was associated with increased and social bonding with decreased odds of being in the *Cross-Context Physical Victims* class compared to the *Uninvolved* class.

Discussion

Overall, our findings demonstrate that there is heterogeneity in youth violence involvement and the importance of considering the victim-perpetrator overlap, generality, severity and form of aggression (i.e., physical, verbal, sexual, controlling) when distinguishing patterns of violence. Further, the current study expands on previous literature to suggest that patterns of violence involvement differ for girls and boys, that individual and family risk and protective factors distinguish the profiles, and that some of the distinguishing risk and protective factors are the same and others are unique for boys and girls.

Three qualitatively distinct patterns of violence involvement were identified that were consistent with expectations based on previous research: *Uninvolved*, *Cross-Context Aggressor-Victims* and *Peer Aggressor-Victims*. Boys and girls in both the *Cross-Context Aggressor-Victims* and *Peer Aggressor-Victims* classes were characterized by involvement in violence as both perpetrators and victims but were distinguished based on the relationship context(s) in which the violence occurred. In particular, consistent with the generally violent antisocial type described by Holtzworth-Munroe and Stuart (1994), boys and girls in the *Cross-Context Aggressor-Victims* class were distinguished from those in other classes based on their involvement in severe aggression towards peers *and* dating partners.

Through a test of measurement invariance, the current study further found that both the prevalence and nature of patterns of violence involvement differed for boys and girls. In particular, boys, but not girls, in the *Cross-Context Aggressor-Victims* class were highly likely to engage in frequent controlling behavior and sexual aggression towards their dating partners. This finding is consistent with Johnson's (2010) assertion that males who are generally violent/antisocial aggressors may be motivated by a general orientation "... towards having their way by any means necessary---with others, as well as with their partner" (p. 214).

The nature of the *Peer Aggressor-Victims* class also differed for boys and girls; girls in this class were likely to be involved only in moderate peer aggression, whereas boys were likely to be involved in both moderate and severe peer aggression. Thus, among boys, two patterns were identified that were characterized by involvement in severe peer aggression: *Peer Aggressor-Victims* and *Cross-Context Aggressor Victims*. Among girls, only *Cross-Context Aggressor-Victims* were involved in severe aggression towards peers. That more boys than girls were engaged in severe peer aggression is consistent with theory and research that suggests boys may be more willing to escalate aggressive behavior towards peers when angered, more likely to be conferred social status as a result of such behavior, and/or receive

more encouragement and fewer restraints on aggressive behavior towards peers (Archer, 2004). We further speculate that strong social norms against the use of male-to-female violence may create a high threshold that, among boys, constrains against the spillover of severe aggression in the peer context into the dating context, thus explaining why a smaller proportion of boys (5%) than girls (12%) were classified as cross-context aggressors.

A violence pattern characterized by involvement only in occasional verbal dating aggression and victimization emerged among girls. While unexpected, others have also identified a latent class of youth involved only in psychological dating aggression and found that girls were significantly more likely than boys to be in this class (Goncy et al., 2016; Haynie et al. 2013; Reidy et al. 2016). Similarly, while unexpected, the finding of a subgroup of boys who experience physical peer and dating violence victimization, but do not engage in aggressive behavior towards others, is consistent with dating violence research finding that more boys than girls report being exclusively victimized (e.g., Goncy et al., 2016) and peer violence research suggesting there is a distinct sub-group of boys who are victims, but not perpetrators, of peer violence (e.g., Haynie et al., 2001).

We hypothesized that the likelihood of membership in the *Cross-Context Aggressor-Victims* class compared to other classes would increase as risk factor scores increased and protective scores decreased among both boys and girls. Consistent with this hypothesis, heavy alcohol use, social bonding, and family violence each significantly distinguished those in the *Cross-Context Aggressor-Victims* class from those in other classes among both boys and girls. The findings for alcohol use and family violence are consistent with those of Whiteside et al. (2013), who similarly found that cross-context aggressor-victims reported greater alcohol misuse and family violence than those involved in other patterns of violence behavior. The effects for family violence were most consistent, which may be explained by increased internalizing and externalizing symptoms often associated with family violence exposure (Evans, Davies, & Delillo, 2008).

In terms of prevention implications, our findings suggest that efforts to prevent boys and girls from engaging in this severe cross-cutting pattern of violence should focus on stopping family violence, fostering social bonding, and decreasing heavy alcohol use. Further, youth who have been exposed to family violence and/or are disengaged from prosocial institutions (e.g., schools) should be targeted by selective programs to prevent the development of this pattern of violence involvement early in the life-course. Extant programs that effectively target the family environment and/or promote prosocial development among youth, and thus may be effective in preventing cross-contextual violence involvement, include the Triple P Positive Parenting Program (Sanders, 2008) and Communities that Care (Hawkins, Oesterle, Brown, Abbot, & Catalano, 2014), among others (for a comprehensive list of evidence-based programs see, the Blueprints for Healthy Youth Development registry; Milhalic & Elliott, 2015).

Among girls, greater anger and impulsivity increased risk of being in each of the violence-involved classes compared to the uninvolved class. These findings, and those of others documenting elevated levels of emotion-dysregulation among aggressive-victims (e.g., Schwartz, 2000), suggest that programs that increase self-control and increase anger

management skills may be particularly effective in preventing all patterns of violence involvement among girls. Further, the finding that anger distinguished girls in the *Cross-Context Aggressor-Victims* class from those in the *Peer Aggressor-Victims* class, suggests that programs that boost emotion regulation among girls involved in peer aggression may reduce spillover of aggression into their dating relationships. A number of different interventions targeting youth have been found to have measurable effects on self-regulation outcomes (for a review, see Murray, Rosenbaum, & Cristopolous, 2016). However, in their review of self-regulation interventions, Murray et al. (2016), found that very few programs targeting middle-school aged youth focus on emotion regulation and identify this as a significant gap area. Taken together with our findings, this suggests the need for efficacious emotion regulation programs to be developed for middle-school aged girls. Higher levels of anger also distinguished boys in the *Peer Aggressor-Victims* and *Cross-Context Aggressor-Victims* classes from those in the *Uninvolved* class and thus may also be an important target for efforts to prevent these patterns of violence among boys. **However, anger did not distinguish boys in the *Cross-Context Aggressor-Victims* group from those in the *Peer Aggressor-Victims* class;** anger may thus not explain spillover of violence perpetration from the peer into the dating context among boys.

Parental monitoring emerged as uniquely protective for boys; higher levels of monitoring were associated with decreased odds of being in the *Cross-Context Aggressor-Victims* and *Peer Aggressor-Victims* classes compared to the *Uninvolved* class. Others have also found an association between parental monitoring/involvement and dating aggression among boys but not girls (Foshee et al., 2001), and suggest that monitoring may be an important factor to target with family-based violence prevention programs for boys. Contrary to expectations, peer delinquency and prosocial beliefs did not distinguish class membership. Notably, auxiliary analysis found that the peer variables did distinguish class membership when bivariate associations were examined, suggesting the effects of these peer factors may have been confounded or mediated by the other risk and protective factors.

The current study has several limitations to consider in interpreting the results and future research. First, with the exception of the peer variables, data were assessed by adolescent self-report and thus subject to potential social desirability and single-reporter bias. Second, we only assessed one form of peer aggression (physical); future research should build on our findings to assess other forms of aggression towards peers including verbal and relational aggression. Third, the current study did not assess covariates that are of theoretical importance for distinguishing violence typologies including: child maltreatment, normative beliefs about violence, hostile attitudes towards women, and attachment/dependency. Finally, analysis of associations between risk and protective factors and class membership was cross-sectional and thus we were unable to establish temporality of associations. Future research could examine the stability of class membership over time and assess predictors of transitions in class membership.

Notwithstanding these limitations, this study has several strengths including: the use of indicators that enabled patterns to be distinguished along multiple theoretical dimensions; examination of measurement invariance by sex, which enabled the detection of important gender differences in patterns of violence involvement; and assessment of multivariate

associations between violence patterns and theoretical correlates using an analytic approach that adjusted for measurement error. As noted above, findings suggest that cross-cutting interventions to prevent involvement in peer and dating aggression should seek to reduce family violence and alcohol use and increase social bonding among boys and girls. Further, the fact that sex differences emerged in violence patterns and their correlates suggests prevention efforts may be more effective if tailored to sex-specific risk factors for particular patterns of violence involvement. For example, our findings suggest that programs that increase emotion regulation among girls and parental monitoring among boys could prevent involvement in peer and/or dating violence. Additional research is needed, however, to replicate the current findings, expand the predictors examined, and examine whether and how different patterns of violence involvement may lead to different psychosocial outcomes.

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Table 1.

Prevalence of dating and peer violence victimization and perpetration among girls (n=1648) and boys (n=1420)

	Girls %	Boys %	χ^2 (DF)
Perpetration			
<i>Peer violence</i>			
Moderate physical	33	28	8.95(1) **
Severe physical	16	22	15.84(1) ***
<i>Dating violence</i>			
Moderate physical	16	7	55.64(1) ***
Severe physical	7	5	7.97(1) **
Sexual	4	8	21.04(1) ***
Verbal			
Occasional	23	11	78.36(1) ***
Frequent	11	9	12.52(1) **
Controlling			
Occasional	10	5	29.24(1) ***
Frequent	5	4	1.06(1)
Victimization			
<i>Peer violence</i>			
Moderate physical	36	36	0.004(1)
Severe physical	12	22	44.81(1) ***
<i>Dating violence</i>			
Moderate physical	14	14	0.02(1)
Severe physical	5	7	4.21(1) *
Sexual	9	10	0.49(1)
Verbal			
Occasional	23	12	69.51(1) ***
Frequent	12	7	33.97(1) ***
Controlling			
Occasional	14	10	8.97(1) ***
Frequent	10	7	10.12(1) ***

Note.

*
p<.05,

**
p<.01,

p<.001

Table 2.

Fit statistics for latent class models among girls (top, n=1648) and boys (bottom, n=1420)

<i>N</i> of classes	<i>N</i> of free parameters	Loglikelihood	BIC	VLMR-LRT p-value	LMR-aLRT p-value	Entropy
<i>Girls</i>						
1	18	−10649.95	21433.2	<i>NA</i>	<i>NA</i>	<i>NA</i>
2	37	−9195.05	18664.17	<.001	<.001	.88
3	56	−8762.11	17939.03	<.001	<.001	.84
4	75	−8461.49	17478.53	<.001	<.001	.82
5	94	−8357.39	17411.06	.16	.17	.81
<i>Boys</i>						
1	18	−8089.37	16309.38	<i>NA</i>	<i>NA</i>	<i>NA</i>
2	37	−6809.85	13888.27	<.001	<.001	.86
3	56	−6307.64	13021.76	.003	.003	.86
4	75	−6093.27	12730.92	<.001	<.001	.87
5	94	−5988.03	12658.46	.06	.06	.85

Note. BIC=Bayesian information criteria; VLMR-LRT= Vuong Lo-Mendell-Rubin likelihood ratio test; LMR-LRT= Lo-Mendell-Rubin adjusted likelihood ratio test

Table 3.

Estimated prevalence rates and item response probabilities from the four-class latent class models for girls (n=1648) and boys (n=1420)

	Girls (n=1648)				Boys (n=1420)			
	Uninvolved (45%)	Peer Aggressor-Victims (23%)	Cross-Context Aggressor-Victims (12%)	Verbal Dating Aggressor-Victims (21%)	Uninvolved (61%)	Peer Aggressor-Victims (21%)	Cross-Context Aggressor-Victims (5%)	Cross-Context Physical Victims (13%)
Aggression								
<i>Peer violence</i>								
Moderate physical	0.02	0.86	0.78	0.14	0.01	0.76	0.73	0.47
Severe physical	0.00	0.42	0.55	0.00	0.02	0.58	0.73	0.33
<i>Dating violence</i>								
Moderate physical	0.00	0.10	0.77	0.19	0.01	0.00	0.96	0.16
Severe physical	0.00	0.02	0.54	0.03	0.00	0.00	0.93	0.04
Sexual	0.00	0.01	0.26	0.05	0.01	0.04	1.00	0.15
Verbal								
Occasional	0.03	0.23	0.28	0.59	0.06	0.06	0.13	0.42
Frequent	0.02	0.07	0.58	0.09	0.02	0.08	0.81	0.16
Controlling								
Occasional	0.01	0.06	0.27	0.24	0.01	0.03	0.17	0.23
Frequent	0.00	0.01	0.29	0.06	0.00	0.00	0.71	0.07
Victimization								
<i>Peer violence</i>								
Moderate physical	0.09	0.80	0.71	0.23	0.01	0.81	0.66	0.66
Severe physical	0.01	0.29	0.44	0.02	0.01	0.56	0.65	0.41
<i>Dating violence</i>								
Moderate physical	0.00	0.04	0.76	0.18	0.01	0.04	0.80	0.57
Severe physical	0.00	0.00	0.42	0.02	0.00	0.01	0.75	0.26
Sexual	0.01	0.06	0.41	0.17	0.01	0.05	0.82	0.26
Verbal								
Occasional	0.06	0.18	0.31	0.55	0.06	0.08	0.15	0.45
Frequent	0.01	0.02	0.59	0.19	0.01	0.01	0.58	0.29
Controlling								

	Girls (n=1648)				Boys (n=1420)			
	Uninvolved (45%)	Peer Aggressor-Victims (23%)	Cross-Context Aggressor-Victims (12%)	Verbal Dating Aggressor-Victims (21%)	Uninvolved (61%)	Peer Aggressor-Victims (21%)	Cross-Context Aggressor-Victims (5%)	Cross-Context Physical Victims (13%)
Occasional	0.02	0.09	0.25	0.34	0.01	0.06	0.11	0.41
Frequent	0.01	0.02	0.51	0.13	0.01	0.02	0.54	0.24

Note. Models estimated separately for boys and girls. Class prevalence estimates based on assigning individuals to their most likely class membership. Item response probabilities $>.50$ are bolded to highlight class distinctions

Table 4.

Associations between risk and protective factors and violence classes among girls (n=1648).

Class	Risk (RF)/Protective (PF) Factor	Comparison (Reference) Class		
		Uninvolved	Verbal Dating Aggressor-Victims	Peer Aggressor-Victims
Cross-Context Aggressor-Victims	<i>Individual factors</i>			
	Impulsivity (RF)	1.75 (1.43, 2.15) ***	1.35 (1.13, 1.67) **	1.19 (0.97, 1.46)^
	Anger (RF)	2.42 (1.85, 3.15) ***	1.54 (1.22, 2.02) **	1.54 (1.20, 1.97) ***
	Alcohol use (RF)	1.93 (1.13, 3.28) *	1.25 (0.80, 2.13)	1.25 (0.75, 2.08)
	Social bonding (PF)	0.42 (0.28, 0.62) ***	0.50 (0.34, 0.78) **	0.58 (0.41, 0.83) **
	<i>Family factors</i>			
	Family violence (RF)	1.45 (1.20, 1.74) ***	1.29 (1.10, 1.56) **	1.22 (1.02, 1.45) *
	Parental monitoring (PF)	1.04 (0.79, 1.38)	1.05 (0.82, 1.42)	0.95 (0.73, 1.23)
	<i>Peer factors</i>			
	Peer delinquency (RF)	1.13 (0.69, 1.87)	1.02 (0.67, 1.70)	1.27 (0.71, 2.26)
	Peer prosocial beliefs (PF)	0.66 (0.38, 1.14)	0.85 (0.53, 1.49)	1.03 (0.60, 1.78)
Peer Aggressor-Victims	<i>Individual context</i>			
	Impulsivity (RF)	1.47 (1.27, 1.71) ***	1.13 (0.99, 1.34)^	--
	Anger (RF)	1.57 (1.26, 1.95) ***	1.00 (0.82, 1.28)	--
	Alcohol use (RF)	1.55 (0.97, 2.46)^	1.00 (0.67, 1.61)	--
	Social bonding (PF)	0.72 (0.51, 1.01)^	0.85 (0.58, 1.28)	--
	<i>Family context</i>			
	Family violence (RF)	1.19 (1.02, 1.39) *	1.06 (0.93, 1.24)	--
	Parental monitoring (PF)	1.10 (0.88, 1.38)	1.11 (0.91, 1.42)	--
	<i>Peer context</i>			
	Peer delinquency (RF)	0.90 (0.55, 1.47)	0.81 (0.51, 1.39)	--
	Peer prosocial beliefs (PF)	0.64 (0.40, 1.02)^	0.82 (0.54, 1.36)	--
Verbal Dating Aggressor-Victims	<i>Individual context</i>			
	Impulsivity (RF)	1.30 (1.12, 1.51) **	--	--
	Anger (RF)	1.57 (1.24, 2.00) ***	--	--
	Alcohol use (RF)	1.55 (0.98, 2.44)^	--	--
	Social bonding (PF)	0.84 (0.57, 1.25)	--	--
	<i>Family context</i>			
	Family violence (RF)	1.12 (0.96, 1.31)	--	--
	Parental monitoring (PF)	1.02 (0.82, 1.27)	--	--
	<i>Peer context</i>			
	Peer delinquency (RF)	1.11 (0.73, 1.68)	--	--
	Peer prosocial beliefs (PF)	0.78 (0.47, 1.28)	--	--

Note.

*
p<.05,

**
p<.01,

p<.001. Model controls for grade, race/ethnicity, and parent education.

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Table 5.

Associations between risk and protective factors and violence classes among boys (n=1420).

Class	Risk (RF)/Protective (PF) Factor	Comparison (Reference) Class		
		Uninvolved	Cross-Context Physical Victims	Cross-Context Aggressor-Victims
Cross-Context Aggressor-Victims	<i>Individual factors</i>			
	Impulsivity (RF)	1.36 (0.92, 2.02)	1.16 (0.77, 1.75)	1.26 (0.84, 1.88)
	Anger (RF)	1.42 (0.85, 2.37)	0.98 (0.58, 1.67)	1.00 (0.59, 1.67)
	Alcohol use (RF)	4.12 (2.01, 8.46) ***	2.89 (1.34, 6.23) **	4.34 (2.04, 9.24) ***
	Social bonding (PF)	0.49 (0.32, 0.76) **	0.77 (0.49, 1.22)	0.57 (0.36, 0.88) *
	<i>Family factors</i>			
	Family violence (RF)	1.69 (1.29, 2.21) ***	1.44 (1.08, 1.92) *	1.50 (1.14, 1.98) **
	Parental monitoring (PF)	0.60 (0.40, 0.90) *	0.63 (0.41, 0.98) *	0.77 (0.51, 1.16)
	<i>Peer factors</i>			
	Peer delinquency (RF)	1.44 (0.84, 2.48)	1.11 (0.65, 1.89)	1.08 (0.65, 1.81)
	Peer prosocial beliefs (PF)	1.30 (0.58, 2.88)	0.79 (0.34, 1.86)	0.90 (0.41, 1.97)
Peer Aggressor-Victims	<i>Individual context</i>			
	Impulsivity (RF)	1.08 (0.94, 1.24)	0.92 (0.76, 1.12)	--
	Anger (RF)	1.43 (1.18, 1.73) ***	0.99 (0.77, 1.26)	--
	Alcohol use (RF)	0.95 (0.57, 1.58)	0.67 (0.35, 1.27)	--
	Social bonding (PF)	0.87 (0.67, 1.13)	1.39 (0.99, 1.93)^	--
	<i>Family context</i>			
	Family violence (RF)	1.12 (0.97, 1.30)	0.96 (0.79, 1.16)	--
	Parental monitoring (PF)	0.78 (0.63, 0.96) **	0.83 (0.63, 1.09)	--
	<i>Peer context</i>			
	Peer delinquency (RF)	1.33 (0.93, 1.92)	1.03 (0.66, 1.59)	--
	Peer prosocial beliefs (PF)	1.44 (0.96, 2.17)^	0.88 (0.50, 1.56)	--
Cross-Context Physical Victims	<i>Individual context</i>			
	Impulsivity (RF)	1.17 (0.99, 1.39)^	--	--
	Anger (RF)	1.45 (1.15, 1.82) **	--	--
	Alcohol use (RF)	1.42 (0.83, 2.45)	--	--
	Social bonding (PF)	0.64 (0.47, 0.86) **	--	--
	<i>Family context</i>			
	Family violence (RF)	1.17 (0.99, 1.39)^	--	--
	Parental monitoring (PF)	0.94 (0.73, 1.21)	--	--
	<i>Peer context</i>			
	Peer delinquency (RF)	1.30 (0.83, 2.03)	--	--
	Peer prosocial beliefs (PF)	1.64 (0.96, 2.82)^	--	--

Note.

*
p<.05,

**
p<.01,

p<.001. Model controls for grade, race/ethnicity, and parent education.

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