

# The Overlap of Youth Violence Among Aggressive Adolescents with Past-Year Alcohol Use—A Latent Class Analysis: Aggression and Victimization in Peer and Dating Violence in an Inner City Emergency Department Sample

LAUREN K. WHITESIDE, M.D.,<sup>a,\*</sup> MEGAN L. RANNEY, M.D., M.P.H.,<sup>g</sup> STEPHEN T. CHERMACK, PH.D.,<sup>c</sup> MARC A. ZIMMERMAN, PH.D.,<sup>d,e</sup> REBECCA M. CUNNINGHAM, M.D.,<sup>b,d,e,f</sup> AND MAUREEN A. WALTON, M.P.H., PH.D.,<sup>c,d</sup>

<sup>a</sup>Division of Emergency Medicine, University of Washington, Seattle, Washington

<sup>b</sup>Department of Emergency Medicine, University of Michigan, Ann Arbor, Michigan

<sup>c</sup>Department of Psychiatry, University of Michigan, Ann Arbor, Michigan

<sup>d</sup>Injury Center, University of Michigan, Ann Arbor, Michigan

<sup>e</sup>University of Michigan School of Public Health, Ann Arbor, Michigan

<sup>f</sup>Department of Emergency Medicine, Hurley Medical Center, Flint, Michigan

<sup>g</sup>Injury Center and Department of Emergency Medicine, Alpert Medical School of Brown University, Providence, Rhode Island

**ABSTRACT. Objective:** The purpose of this study was to identify overlap and violence types between peer and dating aggression and victimization using latent class analysis (LCA) among a sample of aggressive adolescents with a history of alcohol use and to identify risk and protective factors associated with each violence class. **Method:** From September 2006 to September 2009, a systematic sample of patients (14–18 years old) seeking care in an urban emergency department were approached. Adolescents reporting any past-year alcohol use and aggression completed a survey using validated measures including types of violence (severe and moderate aggression, severe and moderate victimization with both peers and dating partners). Using LCA, violence classes were identified; correlates of membership in each LCA class were determined. **Results:** Among this sample ( $n = 694$ ), LCA identified three classes described as (a) peer aggression (PA) (52.2%), (b) peer aggression + peer victimization (PAPV) (18.6%), and (c) multiple

domains of violence (MDV) (29.3%). Compared with those in the PA class, those in the PAPV class were more likely to be male, report injury in a fight, and have delinquent peers. Compared with the PA class, those in the MDV class were more likely to be female, African American, report injury in a fight, carry a weapon, experience negative consequences from alcohol use, and have delinquent peers and more family conflict. Compared with the PAPV class, those in the MDV class were likely to be female, African American, receive public assistance, carry a weapon, experience negative consequences from alcohol use, and use marijuana. **Conclusions:** There is extensive overlap of victimization and aggression in both peer and dating relationships. Also, those with high rates of violence across relationships have increased alcohol misuse and marijuana use. Thus, violence-prevention efforts should consider addressing concomitant substance use. (*J. Stud. Alcohol Drugs*, 74, 125–135, 2013)

YOUTH VIOLENCE IS A SERIOUS public health problem. According to national school-based data, almost 1 in 3 high school students report having been in a physical fight in the last 12 months and nearly 1 in 10 students report being the victim of violence from a dating partner (Eaton et al., 2010). Violence rates are highest during adolescence, and homicide is the second leading cause of death among people ages 15–24 years. Both dating and peer violence can result in nonfatal injuries as well; in 2007 more than 600,000 youths ages 10–24 years were treated in the emergency department (ED) for injuries sustained from violence (Centers for Disease Control and Prevention, 2010).

Although researchers have examined violence from the perspective of either victims or aggressors, a majority of adolescents involved in violence may be both aggressors and victims (Bossarte et al., 2008; Foshee et al., 2011; Rothman et al., 2010; Swahn et al., 2008). Foshee et al. (2011) investigated the overlap between adolescent peer and dating aggression and found that adolescent girls were more likely to engage in aggression in both types of relationships compared with boys, and boys used more frequent and severe aggression compared with girls. Similarly, Rothman and colleagues (2010) found a large degree of overlap between aggression against peers, siblings, and dating partners using a school-based sample. Both of these studies, however, were limited by a lack of assessment of violence victimization. Bossarte et al. (2008) used cluster analysis to identify patterns of victimization and perpetration of dating and peer physical violence among dating adolescents. The class with the highest levels of dating and peer violence also had higher involvement in delinquent behavior than other classes.

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\*Correspondence may be sent to Lauren K. Whiteside at the University of Washington, Division of Emergency Medicine, 325 9th Ave., Box 359702, Seattle, WA 98104-2499, or via email at: [laurenkw@u.washington.edu](mailto:laurenkw@u.washington.edu).

Although this analysis accounted for both victimization and aggression, it did not assess risk and protective factors associated with these violent behaviors. Swahn et al. (2008) also demonstrated extensive overlap between dating and peer victimization and aggression but again did not examine factors associated with violence.

Based on notions of resiliency theory (Fergus et al., 2005; Rutter, 1987), protective factors may reduce the negative effects of risk factors (Kraemer et al., 1997). Prior literature, which is limited by assessing aggressors or victims only, supports resiliency theory in that known risk factors for adolescent dating violence include alcohol use, depressed mood, harsh parenting, and lack of parental supervision (Foshee et al., 2007; Miller et al., 2009; Temple et al., 2011). Although less is known about protective factors specific to dating violence, theoretically, family relationship characteristics such as positive parental involvement and role modeling may be important. Similarly, risk factors for peer violence include alcohol use, marijuana use, exposure to violence, history of violence, and weapon carriage (DuRant et al., 1994; Resnick et al., 2004; Walton et al., 2009). Prior work has shown that parental involvement, pro-social peers, and school achievement are protective factors that help youths overcome the negative risk factors for peer violence (Borowsky et al., 2004; Resnick et al., 2004). A more thorough understanding of the patterns of overlap in violence across relationships (dating and peers), the overlap between victimization and aggression, and the risk and protective factors associated with these behaviors is necessary for effective prevention programs.

Additionally, adolescents involved with violence are more likely to report other risk behaviors, including alcohol use, which is consistent with problem behavior theory (Jessor, 1991). The association between violence and alcohol use among adolescents has been clearly established (Ellickson et al., 1997; Silverman et al., 2001; Swahn et al., 2004; Walton et al., 2009). Given this strong association, more information is needed on the profile of adolescents who engage in both violence and alcohol use to inform interventions that can address both of these risky behaviors.

EDs represent a unique setting to study, screen, and intervene for high-risk behaviors among adolescents. Among adolescent males, injury is the most common reason to visit an ED (Melzer-Lange and Lye, 1996), and rates of dating aggression and victimization among adolescents in urban EDs are high regardless of the reason for the visit (Carroll et al., 2011; Whiteside et al., 2009). Approximately one in four teens ages 15–17 years does not have a primary care physician (McCormick et al., 2000) and thus seeks health care in the ED. To date, a single ED-based intervention study for youth violence and alcohol has shown sustained reductions in peer aggression 1 year after the ED visit (Cunningham et al., 2012; Walton et al., 2010).

To inform future youth violence and alcohol interventions, more information is needed on the overlap of victim-

ization and aggression among both peers and dating partners. The aims of this study are to identify overlap and violence types between peer and dating aggression and victimization using latent class analysis (LCA) among a sample of aggressive adolescents with a history of alcohol use and to identify risk and protective factors associated with each violence class. Based on theory and the literature described above, our hypotheses were that classes would vary based on the type of violence (aggression or victimization) as well as within relationship type (peer vs. dating), and there would be a class of adolescents with high levels of both types of violence across both relationship types. Those with the highest violence risk would have the highest risk factor profile, including weapon carriage, alcohol misuse, marijuana use, and injury from fighting. Findings from this study will fill an important gap in the literature by including peer and dating aggression and victimization among a high-risk population with past-year aggression and alcohol use, which will provide critical information for future intervention development.

## Method

In this article, we present cross-sectional data collected as part of the recruitment phase of a larger randomized controlled trial of an ED-based alcohol and violence intervention among adolescents (Cunningham et al., 2009; Walton et al., 2010).

### *Participants and procedures*

Patients ages 14–18 years presenting to the ED for any reason (i.e., fever, headache, injury) were systematically approached by research assistants to complete a self-administered computerized screening survey. All surveys were completed after the research assistant obtained parental consent and participant assent (<18 years) or participant consent for those 18 years old. Youths who completed the screen received a \$1.00 gift. Patients were excluded if they had no parent or guardian available to provide consent, were actively suicidal, were in police custody, were being treated for sexual assault, or had abnormal vital signs.

Participants were included in the baseline assessment if they separately endorsed both past-year aggression (defined as physical fighting with peers or with dating partners) and past-year alcohol consumption, which was defined as a positive answer to the question “In the past 12 months, have you had a drink of beer, wine, or liquor more than two to three times?” Eligible respondents then completed a self-administered computerized questionnaire and received \$20 in compensation.

Recruitment occurred between September 2006 and September 2009, noon to 11 P.M., 7 days a week at the Hurley Medical Center, which is an urban Level 1 trauma center located in Flint, MI. All study procedures were approved by

the Hurley Medical Center and University of Michigan institutional review boards, and a certificate of confidentiality was obtained from the National Institutes of Health.

### Measures

All measures were selected or adapted to ensure both the screening and baseline surveys were concise.

*Violence.* Separate questions were asked regarding physical aggression and victimization with peers (excluding dating partners) and physical aggression and victimization with dating partners (excluding peers) over the past 12 months. Peer aggression items were drawn from the Conflict Tactics Scale (CTS), which is a validated violence scale that has been used in adolescent samples to assess moderate and severe physical violence (Straus, 1979). Moderate aggression (pushed or shoved, hit or punched, slammed someone into wall, or slapped someone) (Cronbach's  $\alpha = .80$ ) and severe aggression (serious physical fights, class fights, caused someone to need medical care, beat up, kicked, or used a knife or gun on someone) ( $\alpha = .76$ ) were both assessed separately. To assess peer victimization, similar validated items from the CTS (Straus et al., 1996), which mirrored the questions on peer aggression and used moderate and severe categories of victimization, were used ( $\alpha = .86$ ). To assess physical dating aggression, the original four-item Conflict in Adolescent Dating Relationships Inventory (Wolfe et al., 2001) was collapsed in our survey measure into two items assessing frequency of moderate dating aggression (e.g., threw something that could hurt, twisted arm or hair, pushed, shoved, grabbed, or slapped) and severe dating aggression (e.g., punched or hit with something that could hurt, choked, slammed against a wall, beat up, burned or scalded on purpose, kicked, or used a knife or gun on) ( $\alpha = .86$ ). Two similar items were used to assess the frequency of dating victimization ( $\alpha = .86$ ). These two questions mirrored the questions on dating aggression and were separated into moderate and severe dating victimization. Response choices for all dating questions were modified to be analogous to the choices offered by the CTS used to assess peer violence (Straus, 1979). When creating distinct variables for moderate and severe violence, participants who report both types of violence were coded as severe (Straus, 1999). The answers for these eight separate violence questions were dichotomized to past-year yes/no.

*Demographics.* Demographic items, including receipt of public assistance and academic performance, were selected from the National Study of Adolescent Health (Harris et al., 2003).

*Risk factors.* To assess injury from fighting, participants were asked if they had been injured in the past 12 months from involvement in a physical fight (Harris et al., 2003). To assess weapon carriage, participants were asked if they had carried a knife/razor or a gun in the past 12 months (Zun et

al., 2005). Two questions ("How often do family members get so angry they throw things?" and "How often do family members hit each other in anger?") were used to assess family conflict (Moos et al., 1974). Negative peer influences, or friend delinquency, was assessed using eight questions from the Flint Adolescent Study ( $\alpha = .84$ ), such as "How many of your friends drink beer, wine, or hard liquor at least once a month?" (Doljanac et al., 1998). Answers to all eight questions were summed to create a continuous variable from 0 to 32. Alcohol misuse (i.e., missing school, missing out on activities, being involved in a car crash after drinking, trouble getting along with friends secondary to alcohol use) was assessed using the Problem Oriented Screening Instrument for Teenagers (POSIT) (Rahdert, 1991), which is a 17-item scale. None of the items in the POSIT relate to violence during alcohol use. For the resultant composite alcohol misuse variable ( $\alpha = .83$ ), a cutoff of 2 was previously validated in adolescents to indicate alcohol misuse (Knight et al., 2002; Latimer et al., 1997). Subsequently, a categorical variable of a POSIT greater than or equal to 2 indicating alcohol misuse was created. The Alcohol Use Disorders Identification Test–Consumption (AUDIT-C) (Bush et al., 1998; Saunders et al., 1993) assessed alcohol use frequency and quantity on a typical occasion and heavy episodic drinking, described as five or more drinks per occasion (Chung et al., 2002). A composite alcohol consumption variable was calculated summing the total responses to the AUDIT-C ( $\alpha = .81$ ) (Chung et al., 2002). Participants were also asked about past-year marijuana use using a validated question from the Monitoring the Future study regarding frequency of use (Johnston et al., 2007). For analysis purposes, this question was dichotomously coded yes/no.

*Protective factors.* The Parental Monitoring Scale, which is an eight-question tool that has previously been validated in adolescents ( $\alpha = .80-.87$ ) (Arthur et al., 2002), was also used. Participant academic performance and living situation were assessed using items obtained from the National Study of Adolescent Health (Harris et al., 2003).

### Statistical analysis

To describe the demographic characteristics and frequency of violent behaviors within the entire study population, descriptive statistics and frequencies were generated using SAS Version 9.1.3 (SAS Institute Inc., Cary, NC).

LCA was used to describe the violence (moderate and severe dating victimization and dating aggression and moderate and severe peer aggression and peer victimization) in this population with past-year alcohol use. LCA is a person-centered statistical technique that groups respondents based on a set of measured variables, such as survey items, that can be explained by a set of unmeasured, or latent, categorical variables (Collins and Lanza, 2010). In this analysis, eight distinct indicator variables were used: moderate peer aggres-

sion, severe peer aggression, moderate peer victimization, severe peer victimization, moderate dating aggression, severe dating aggression, moderate dating victimization, and severe dating victimization.

This analysis was carried out in an exploratory fashion using Mplus (Version 5.2) using both statistical and theoretical endpoints. A two-class model was examined first. Next, classes were added to the model until no further statistical and theoretical improvements were observed. The empirical fit of the model was based on the Bayesian information criterion (BIC), with lower values reflecting an improved fit (Nylund et al., 2007), and entropy, with an entropy value closer to 1.0 indicating better prediction. As per the LCA construct, conditional probabilities of all indicator variables within each latent class were then assessed to further characterize violence within each class. In addition, a graphical depiction of the subgroups was produced to evaluate the conceptual fit of each model. After a model was chosen based on statistical endpoints and theory, the Vuong–Lo–Mendell–Rubin test and Lo–Mendell–Rubin Adjusted Likelihood Ratio test were both run to ensure that the model chosen was not statistically different from the model with one more class. A *p* value greater than .05 for the Vuong–Lo–Mendell–Rubin classes and the Lo–Mendell–Rubin Adjusted Likelihood Ratio test indicates that the two models are not statistically different, and thus it is reasonable to choose the simplest model with the fewest number of classes. Thus, the most parsimonious LCA model was retained.

Analyses were then conducted to assess the associations between each violence class, demographics, and risk and protective factors described above. First, using chi-square tests for categorical variables and analysis of variance for continuous variables, bivariate comparisons were made to indicate general differences in the classes. Then, a post hoc chi-square test for categorical variables and Duncan's test for continuous variables were performed, examining the specific differences across classes for each variable. Next, a multinomial regression model was created using the demographics, risk, and protective factors found to be positively associated in the bivariate analysis. Class 1 was used initially as the reference group in the multinomial model compared with Class 2 and Class 3. To compare Class 2 and Class 3, a second logistic model was created predicting membership in Class 3 using Class 2 as the reference group. To evaluate for multicollinearity, diagnostics were calculated on all variables retained in the final regression using SAS version 9.1.3 (SAS Institute Inc., Cary, NC).

## Results

### Descriptive findings

Of patients ages 14–18 years who were eligible for the screen (*n* = 4,296), approximately 88% were approached by

TABLE 1. Frequencies of reported violent behaviors among the sample (*n* = 694)

Violence variables	<i>n</i> (%)
Dating violence	
Dating aggression moderate	297 (42.8)
Dating aggression severe	164 (23.6)
Dating victimization moderate	235 (33.9)
Dating victimization severe	97 (14.0)
Peer violence	
Peer aggression moderate	625 (90.1)
Peer aggression severe	567 (81.7)
Peer victimization moderate	284 (40.9)
Peer victimization severe	168 (24.2)
Additional violence descriptions	
Moderate or severe peer aggression	673 (97.0)
Moderate or severe peer victimization	319 (46.0)
Moderate or severe dating aggression	310 (44.7)
Moderate or severe dating victimization	248 (35.7)
Peer aggression only	200 (28.8)
Dating aggression only	12 (1.7)

the research assistant to participate, and 88% of those approached completed the screen (*n* = 3,338). Approximately one in four screened adolescents reported past-year aggression and alcohol use (*n* = 829; 24.8%); of these, 726 (87.6%) completed the baseline assessment. Of those who completed the baseline, 694 (95.6%) noted past-year aggression and had complete data for dating violence and thus comprise the sample used for this analysis.

The mean age of the total sample was 16.8 years (*SD* 1.3), 55.6% (*n* = 388) were female, 55.2% (*n* = 383) were African American, and 57.3% (*n* = 396) received public assistance. The frequency of all four dating violence variables and all four peer violence variables along with the frequency of additional violence groupings are presented in Table 1 for the entire sample. Of note, 97% (*n* = 673) of the sample reported either moderate or severe peer aggression, whereas only 28.8% (*n* = 200) reported that they were involved solely in peer aggression, and 1.7% (*n* = 12) were solely involved in dating aggression.

### Latent class findings

Table 2 and Figure 1 report the conditional probabilities from the LCA examining violence. A three-class solution best fit the data (BIC = 5450; entropy = 0.77) as compared with a two-class solution (BIC = 5535; entropy = 0.76) or a four-class solution (BIC = 5439; entropy = 0.76). The Vuong–Lo–Mendell–Rubin test (*p* = .09) and the Lo–Mendell–Rubin Adjusted Likelihood ratio test (*p* = .1008) indicated that a four-class solution was not statistically different from the three-class solution, and thus the three-class solution was selected for further analysis. Class 1, or the peer aggression (PA) class (*n* = 362, 53%), had a high probability of past-year moderate and severe peer aggression but a very low probability of other violent behaviors. Nearly all of Class 2,

TABLE 2. Conditional probabilities of violence variables clustered by class

	Class 1 PA ( <i>n</i> = 362) (53%)	Class 2 PAPV ( <i>n</i> = 129) (18.6%)	Class 3 MDV ( <i>n</i> = 203) (29.3%)
<b>Dating violence</b>			
Aggression moderate	.25	.05	.98
Aggression severe	.05	.02	.72
Victimization moderate	.16	.34	.67
Victimization severe	.03	.13	.35
<b>Peer violence</b>			
Aggression moderate	.83	1.00	.97
Aggression severe	.70	.94	.95
Victimization moderate	.11	.84	.69
Victimization severe	.04	.58	.41

Notes: PA = peer aggression; PAPV = peer aggression + peer victimization; MDV = multiple domains of violence.

or the peer aggression + peer victimization (PAPV) class (*n* = 129, 19%), engaged in past-year severe peer aggression, and all members of the class had past-year moderate peer aggression. Additionally, most members of the PAPV class had past-year moderate and severe peer victimization; however, there were low levels of dating aggression and dating vic-

timization within this class. Class 3, or the multiple domains of violence (MDV) class (*n* = 203, 29%), had high levels of all violence categories, with most members engaged in moderate dating aggression, moderate peer aggression, and severe peer aggression along with high levels of moderate and severe peer and dating victimization.

The frequencies of demographics and violence risk and protective factors are presented in Table 3 for each class. Concerning demographics, post hoc chi-square tests done on categorical variables revealed that there are differences between gender, race, and public assistance across the three classes. There is no difference in the age of participants across classes (Table 3). Among the protective factors, only parental monitoring differed across classes, with the amount of parental monitoring being highest in the PA class (Class 1) and lowest in the MDV class (Class 3). Class 3 also reported the highest levels of risk factors, specifically being injured in a fight, weapon carriage, friend delinquency, increased family conflict, marijuana use, and alcohol misuse. Of note, no differences exist in the rates of injury from a fight between Class 2 and Class 3, but the rates of injury differed between Class 1 and Class 2 and between Class 1

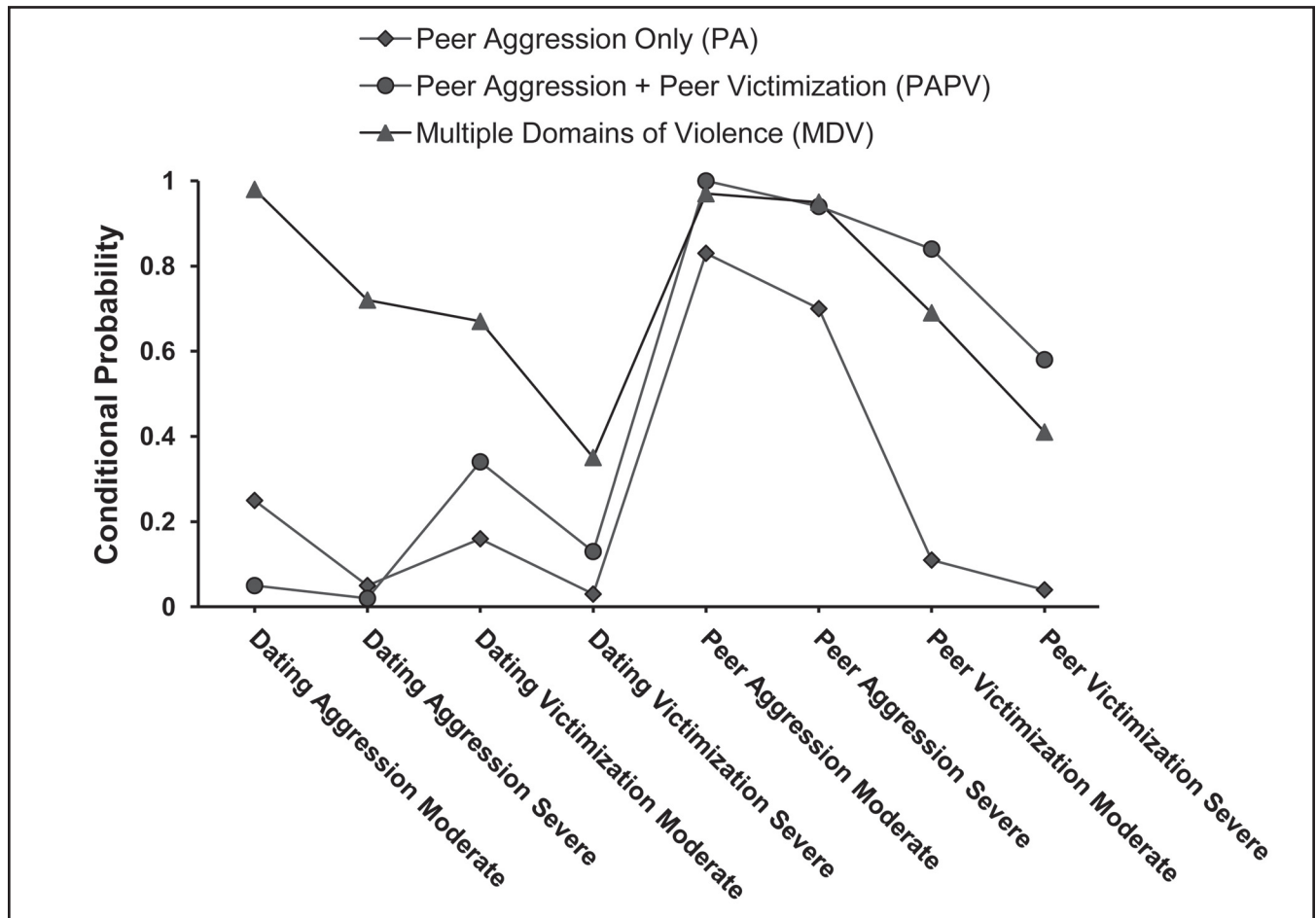


FIGURE 1. Conditional probabilities from latent class analysis of youth violence types

TABLE 3. Bivariate analysis of violence classes based on demographics, protective, and risk factors

Variable	Class 1 PA ( <i>n</i> = 362) (52.2%)	Class 2 PAPV ( <i>n</i> = 129) (18.6%)	Class 3 MDV ( <i>n</i> = 203) (29.3%)	<i>F</i>	$\chi^2$ Class 1 vs. Class 2	$\chi^2$ Class 1 vs. Class 3	$\chi^2$ Class 2 vs. Class 3
	<i>M</i> ( <i>SD</i> ) / <i>n</i> (%)	<i>M</i> ( <i>SD</i> ) / <i>n</i> (%)	<i>M</i> ( <i>SD</i> ) / <i>n</i> (%)				
<b>Demographics</b>							
Age, in years	16.7 (1.4)	16.9 (1.3)	16.8 (1.3)	2.31 (0.11)			
Female <sup>a,b,c</sup>	199 (55.0%)	45 (34.9%)	144 (70.9%)		15.35***	13.90***	41.81***
African American <sup>b,c</sup>	185 (51.1%)	71 (45.0%)	140 (69.0%)		1.44	18.94***	18.88***
Public assistance <sup>b,c</sup>	201 (55.8%)	64 (49.6%)	131 (64.9%)		1.48	4.35*	7.55**
<b>Protective factors</b>							
Passing grades in school	182 (50.3%)	64 (49.6%)	105 (51.7%)		0.02	0.11	0.14
Live with parents	292 (80.9%)	109 (84.5%)	153 (75.7%)		0.83	2.07	3.66
Parental monitoring <sup>a,b,c</sup>	24.0 (5.2)	23.1 (4.8)	22.0 (5.5)	9.47***			
<b>Risk factors</b>							
Injured in a fight <sup>a,b</sup>	68 (18.8%)	42 (32.6%)	68 (33.5%)		10.38**	15.41***	0.03
Weapon carriage <sup>a,b,c</sup>	136 (37.6%)	52 (40.3%)	129 (63.6%)		0.30***	35.24***	17.17***
Friend delinquency <sup>a,b,c</sup>	7.3 (4.5)	9.2 (5.0)	10.4 (5.7)	25.88***			
Family Conflict Scale <sup>a,b,c</sup>	3.0 (1.4)	3.4 (1.5)	3.9 (1.9)	18.78***			
Alcohol consumption (AUDIT-C)	3.3 (2.7)	3.7 (2.9)	3.8 (3.0)	10.66			
Alcohol misuse (POSIT) <sup>b,c</sup>	184 (50.8%)	77 (59.7%)	148 (72.9%)		3.00	26.16***	6.31**
Marijuana use <sup>b,c</sup>	224 (61.9%)	80 (62.0%)	153 (75.4%)		0.00	10.66**	6.72**

Notes: PA = peer aggression; PAPV = peer aggression + peer victimization; MDV = multiple domains of violence; AUDIT-C = Alcohol Use Disorders Identification Test—Consumption; POSIT = Problem Oriented Screening Instrument for Teenagers. <sup>a</sup>Class 1 and Class 2 are different; <sup>b</sup>Class 1 and Class 3 are different; <sup>c</sup>Class 2 and Class 3 are different.

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

and Class 3. Additionally, no differences exist between the rates of alcohol misuse and marijuana use between Class 1 and Class 2, but differences in both alcohol misuse and marijuana use exist between Class 2 and Class 3 and between Class 1 and Class 3 (Table 3).

In the multinomial regression (Table 4), those in the PAPV class were less likely to be female (odds ratio [OR] = 0.49, 95% CI [0.32, 0.76]) compared with the PA class. Also, members of the PAPV class had nearly two times greater odds of having been injured in a fight (OR = 1.94, 95% CI [1.21, 3.11]) and were more likely to report friend delinquency (OR = 1.06, 95% CI [1.01, 1.12]) compared with the PA class. Members of the MDV class had approxi-

mately three times greater odds of being female (OR = 3.01, 95% CI [1.95, 4.64]) and more than two times greater odds of being African American (OR = 2.15, 95% CI [1.41, 3.27]) compared with the PA class. Additionally, those in the MDV class had higher odds of numerous violence risk factors, specifically previous injury from a fight (OR = 1.92, 95% CI [1.23, 2.99]), past-year weapon carriage (OR = 2.22, 95% CI [1.45, 3.33]), family conflict (OR = 1.37, 95% CI [1.08, 1.75]), friend delinquency (OR = 1.08, 95% CI [1.03, 1.13]) and misuse of alcohol (OR = 1.94, 95% CI [1.26, 3.00]) compared with those in the PA class. Note that parental monitoring was no longer significant once other risk factors were included in the multinomial regression.

TABLE 4. Multinomial regression analyses of violence classes based on demographics, protective factors, and risk factors

Variable	Class 2 PAPV <sup>a</sup>	Class 3 MDV <sup>a</sup>	Class 3 MDV <sup>b</sup>
	OR [95% CI]	OR [95% CI]	OR [95% CI]
Female gender	0.49 [0.32, 0.76]***	3.01 [1.95, 4.64]**	6.34 [3.57, 11.28]***
African American race	0.88 [0.57, 1.35]	2.15 [1.41, 3.27]***	3.42 [1.92, 6.08]***
Public assistance	0.78 [0.51, 1.19]	1.27 [0.85, 1.90]	1.86 [1.08, 3.20]*
Injured in a fight	1.94 [1.21, 3.11]**	1.92 [1.23, 2.99]**	1.17 [0.66, 2.07]
Parental monitoring	1.00 [0.96, 1.04]	0.97 [0.93, 1.01]	0.97 [0.92, 1.02]
Weapon carriage	0.87 [0.55, 1.36]	2.22 [1.45, 3.33]***	2.61 [1.48, 4.62]**
Family Conflict Scale	1.29 [0.98, 1.70]	1.37 [1.08, 1.75]**	1.04 [0.75, 1.43]
Friend delinquency	1.06 [1.01, 1.12]*	1.08 [1.03, 1.13]**	1.02 [0.97, 1.08]
Alcohol misuse (POSIT)	0.99 [0.60, 1.62]	1.94 [1.26, 3.00]**	2.02 [1.11, 3.69]*
Marijuana use	0.71 [0.44, 1.13]	1.24 [0.79, 1.94]	2.01 [1.10, 3.68]*

Notes: PA = peer aggression; PAPV = peer aggression + peer victimization; MDV = multiple domains of violence; OR = odds ratio [95% confidence interval]; POSIT = Problem Oriented Screening Instrument for Teenagers. <sup>a</sup>Class 1 (PA) is the reference class; <sup>b</sup>Class 2 (PAPV) is the reference class.

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

Further, members of the MDV class had more than six times increased odds of being female (OR = 6.34, 95% CI [3.57, 11.28]), more than three times increased odds of identifying as African American (OR = 3.42, 95% CI [1.92, 6.08]), and almost two times increased odds of receiving public assistance (OR = 1.86, 95% CI [1.08, 3.20]) compared with the PAPV class. Additionally, those in the MDV class had increased odds of multiple violence risk factors compared with members of the PAPV class, specifically weapon carriage (OR = 2.61, 95% CI [1.48, 4.62]), alcohol misuse (OR = 2.02, 95% CI [1.11, 3.69]), and marijuana use (OR = 2.01, 95% CI [1.10, 3.68]) (Table 4).

### Discussion

Extensive overlap between peer and dating violence and between aggression and victimization was observed in this study of aggressive adolescents with past-year alcohol use. Almost all of the sample reported some type of peer aggression, yet only 28.8% reported exclusively peer aggression, and only 1.7% reported exclusively dating aggression. Extensive overlap was also noted between victims and aggressors. The LCA identified three distinct classes of adolescents. Given the varying risk factor profiles across classes, adolescents may respond differently to prevention programs depending on their violence involvement. Within the LCA, almost one third (29%) of the sample was classified in the MDV class. This degree of victimization across relationship types is similar to that reported in other studies (Bossarte et al., 2008; Ford et al., 2010), albeit at a higher baseline rate, which is likely related to the enriched nature of this sample of high-risk youths reporting past-year aggression and alcohol use. Nonetheless, we found differences across the three identified classes of youths.

The PA-only class was the least likely class to report the traditional correlates of violence involvement, such as marijuana use, alcohol misuse, and weapon carriage. This class was also the most broadly represented by each of the various demographic groups (age, race, gender, and socioeconomic status). Although the PA class expressed some peer aggression, it is possible that the relative absence of other risky behaviors such as substance use suggests that for some youths residing in urban communities, isolated peer aggression may be normative or necessary. Prior research has demonstrated an association among neighborhood disadvantage and youth violence (Chauhan et al., 2009; Resko et al., 2010), and adolescents who engage in limited forms of aggression may help to protect themselves from becoming victims of violence (Johnson et al., 2004; Molnar et al., 2005; Reese et al., 2001; Voisin et al., 2011).

The PAPV class is most similar to that described by the popular press because this class is predominantly male, with high odds of injury and high odds of delinquent friends; yet, they were not more likely to report marijuana use,

alcohol misuse, and weapon carriage than the PA class. The PAPV class may represent those involved in frequent fights at school, reporting more peer victimization than the other classes of youths but without being involved in dating violence. Although this study did not address the power dynamic inherent in self-reported victimization and aggression, the PAPV class may use physical violence to cope with their own victimization or may be impulsive and/or lack social skills to handle conflict situations (Carbone-Lopez et al., 2010; Dukes et al., 2010; Nansel et al., 2003). It is notable that this class (PAPV) did report more frequent injuries from fighting compared with those in the PA class. It is known that, among assault-injured youths, the risk of future violence (as both a victim and perpetrator) is high in the period immediately following the injury (Wiebe et al., 2011). Among youths with a history of injury secondary to assault, attitudes regarding retaliation were shown to predict future fighting and aggression (Copeland-Linder et al., 2012). Although it is unknown if the injuries reported in this sample were secondary to aggression or victimization, retaliatory behavior can be either reactive or proactive to violence. Alternatively, it may be that these youths are exposed to settings/neighborhoods in which violence is more frequent or normative (DuRant et al., 1994). Neighborhood studies would be helpful to further elicit the effects of neighborhood composition on violence involvement.

Those in the MDV class reported both victimization and aggression with dating partners and peers, and they also reported higher odds of other risky behaviors, particularly alcohol misuse and marijuana use, compared with the PA class and PAPV class, respectively. This class is most consistent with theories that explain and studies that document the clustering of risky behaviors across multiple domains, including alcohol use and violence among adolescents (Jessor, 1991; Walton et al., 2009). The association between alcohol use and youth violence with peers and dating partners can be explained by proximal effects models in which alcohol use impairs information-processing capacity, which can lead to an overreaction to perceived provocations and a decrease in a person's inhibition (Pihl and Hoaken, 2002). Chronic effects models, in which heavy alcohol use can result in impaired neuropsychological functioning and exacerbate psychopathological disorders and aggressive behavior, may also explain youths in this class (White et al., 2009). Alternatively, social contextual models suggest that alcohol misuse and youth violence may be associated as a function of shared risk and protective factors (Chermack and Giancola, 1997; Klostermann and Fals-Stewart, 2006). Our results support others who found that involvement in multiple forms of violence may create the highest risk of future injury, adult partner and peer violence, and ongoing drug and alcohol use and substance use disorders (Archer, 2000; Ford et al., 2010; Foshee et al., 2001; Miller et al., 2010). It is notable

that the MDV class had increased alcohol misuse and marijuana use compared with the PAPV class, suggesting that substance use intervention is an important risk factor for youths engaging in both peer violence and dating violence and that substance use intervention may be well suited for populations of youths engaged in violence across multiple domains (Walton et al., 2010).

Additionally, the MDV class was more likely to be female compared with the PA class and the PAPV class. Researchers have reported that female adolescents are more likely to engage in dating aggression compared with their male counterparts (Archer, 2000; Foshee et al., 2001, 2011; Jain et al., 2010; Rothman et al., 2010). Others also report that high-risk adolescent females may be at equal or higher risk for both perpetrating and being injured by peer and dating violence compared with males (Miller et al., 2010; Ranney and Mello, 2011; Ranney et al., 2011). Yet, most violence prevention programs focus exclusively on males or ignore gender differences. The MDV class also reported more violence exposure (higher odds of weapon carriage, family conflict, and friend delinquency) compared with the PA class and increased odds of weapon carriage compared with the PAPV class. The youths in the MDV class, like the PAPV class, may also be using violent behavior as a coping mechanism, and more research is needed to further elucidate the motives associated with violent behavior.

Finally, because the various types of violence rarely occur in isolation, interventions may be most appropriately targeted at preventing both dating and peer violence, and both aggression and victimization, rather than attending to one subtype. Moreover, resources may be most appropriately directed at screening for those forms of violence that correspond to the highest behavioral risk—specifically involvement in both aggression and victimization—or violence across relationships (corresponding to the PAPV and MDV classes). Adolescents who present for ED care after an assault have a high rate of subsequent violence (Wiebe et al., 2011), and the ED may be an appropriate place to identify aggressive and violent youths and to intervene to prevent future violence. Targeting assault-injured youths may be a way to capture youths at particularly high risk for future violence, although programs would need to be available on weekends when alcohol-related violence has been shown to occur more frequently (Wells and Graham, 2003). Walton and colleagues (2010) targeted multiple behaviors using brief interventions to successfully reduce violence among adolescents engaged in aggression and alcohol use, but they did not report outcomes related to dating aggression or victimization. Given the high rates of injury seen in the PAPV and MDV classes, intervention efforts could also focus on impulse control, anger management, and conflict resolution to decrease retaliatory violence.

Additionally, neighborhood-level intervention efforts could focus on changing neighborhood collective efficacy,

improving community resources or programs, or increasing green space and parks (Jain et al., 2010; Molnar et al., 2008). Lastly, this analysis highlights the differences that exist between males and females in peer and dating violence. Again, given the overlap between domains of violence, dating violence interventions should not ignore peer violence or the high rates of aggression reported for female adolescents. Future studies that investigate the trajectory of violence among youths in this class can examine correlates of their risk for long-term negative consequences and continued violent behavior.

### *Limitations*

Although there are several strengths of this study, including the large sample from a diverse urban ED, inclusion of victims and aggressors across multiple relationships, and the use of LCA to determine how violent behaviors cluster, several limitations require discussion. Whereas the use of LCA gives a person-centered approach, there was not adequate sample size to split the sample and replicate the analysis on a smaller piece of the sample. Replication is needed using similar methods. Our findings are limited by the cross-sectional nature of the study, which limits causality and limits our ability to assess reciprocal influences of victimization and aggression. It is possible that the incident reported could have occurred in a group setting with someone fighting with a dating partner at the same time they were fighting with a peer. Future studies are needed using an event-based data collection methodology to tease apart the people involved in incidents of violence. Although participants needed to endorse both alcohol use and aggression to gain entry into the study, it is unknown how many youths engaged in these risk behaviors at the same time. Event-based methods are needed to further elucidate the temporal relationship between alcohol use and aggression. Although the substance use variables were all drawn from validated surveys, these variables assessed use compared with nonuse; diagnostic assessments of substance use disorders were not feasible in this study. The findings of this analysis also may not generalize to nonaggressive, non-alcohol-using populations, or nonurban populations. In addition, the data were all based on self-reports, which could introduce response bias, but researchers have demonstrated that self-reported data for sensitive information in this population—especially when using computerized assessment and when confidentiality is assured—can be reliable (Brenner et al., 2003; Turner et al., 1998; Webb et al., 1999). Additionally, for practical reasons it was not possible to staff the ED 24 hours a day; future studies should include youths presenting during midnight and morning shifts. Despite these limitations, our findings offer useful insights regarding aggression and victimization among peers and dating partners among an aggressive, alcohol-using population.



## Conclusion

Among adolescents with past-year aggression and alcohol use, the comorbidity of victimization and aggression among peer and dating relationships is high. This study contributes to our understanding of aggression and victimization in a high-risk sample and informs potential prevention and intervention strategies. These highest risk youths may benefit from tailored interventions for both aggression and victimization across relationships, and future research should address co-occurring substance use.

## References

- Archer, J. (2000). Sex differences in aggression between heterosexual partners: A meta-analytic review. *Psychological Bulletin, 126*, 651–680.
- Arthur, M. W., Hawkins, J. D., Pollard, J. A., Catalano, R. F., & Baglioni, A. J., Jr. (2002). Measuring risk and protective factors for substance use, delinquency, and other adolescent problem behaviors. The Communities That Care Youth Survey. *Evaluation Review, 26*, 575–601.
- Borowsky, I. W., & Ireland, M. (2004). Predictors of future fight-related injury among adolescents. *Pediatrics, 113*, 530–536.
- Bossarte, R. M., Simon, T. R., & Swahn, M. H. (2008). Clustering of adolescent dating violence, peer violence, and suicidal behavior. *Journal of Interpersonal Violence, 23*, 815–833.
- Brener, N. D., Billy, J. O., & Grady, W. R. (2003). Assessment of factors affecting the validity of self-reported health-risk behavior among adolescents: Evidence from the scientific literature. *Journal of Adolescent Health, 33*, 436–457.
- Bush, K., Kivlahan, D. R., McDonell, M. B., Fihn, S. D., & Bradley, K. A. (1998). The AUDIT alcohol consumption questions (AUDIT-C): An effective brief screening test for problem drinking. Ambulatory Care Quality Improvement Project (ACQUIP). Alcohol Use Disorders Identification Test. *Archives of Internal Medicine, 158*, 1789–1795.
- Carbone-Lopez, K., Esbensen, F. A., & Brick, B. T. (2010). Correlates and consequences of peer victimization: Gender differences in direct and indirect forms of bullying. *Youth Violence and Juvenile Justice, 8*, 332–350.
- Carroll, B. C., Raj, A., Noel, S. E., & Bauchner, H. (2011). Dating violence among adolescents presenting to a pediatric emergency department. *Archives of Pediatric and Adolescent Medicine, 165*, 1101–1106.
- Centers for Disease Control and Prevention. (2010). *Web-based Injury Statistics Query and Reporting System (WISQARS)*. Retrieved from <http://www.cdc.gov/injury/wisqars>
- Chauhan, P., Reppucci, N. D., & Turkheimer, E. N. (2009). Racial differences in the associations of neighborhood disadvantage, exposure to violence, and criminal recidivism among female juvenile offenders. *Behavioral Sciences & the Law, 27*, 531–552.
- Chermack, S. T., & Giancola, P. R. (1997). The relation between alcohol and aggression: An integrated biopsychosocial conceptualization. *Clinical Psychology Review, 17*, 621–649.
- Chung, T., Colby, S. M., Barnett, N. P., & Monti, P. M. (2002). Alcohol Use Disorders Identification Test: Factor structure in an adolescent emergency department sample. *Alcoholism: Clinical and Experimental Research, 26*, 223–231.
- Collins, L. M., & Lanza, S. T. (2010). *General introduction in latent class and latent transition analysis: With applications in the social, behavioral, and health sciences*. Hoboken, NJ: Wiley and Sons.
- Copeland-Linder, N., Johnson, S. B., Haynie, D. L., Chung, S.-E., & Cheng, T. L. (2012). Retaliatory attitudes and violent behaviors among assault-injured youth. *Journal of Adolescent Health, 50*, 215–220.
- Cunningham, R. M., Chermack, S. T., Zimmerman, M. A., Shope, J. T., Bingham, C. R., Blow, F. C., & Walton, M. A. (2012). Brief motivational interviewing intervention for peer violence and alcohol use in teens: One-year follow-up. *Pediatrics, 129*, 1083–1090.
- Cunningham, R. M., Walton, M. A., Goldstein, A., Chermack, S. T., Shope, J. T., Bingham, C. R., . . . Blow, F. C. (2009). Three-month follow-up of brief computerized and therapist interventions for alcohol and violence among teens. *Academic Emergency Medicine, 16*, 1193–1207.
- Doljaanac, R. F., & Zimmerman, M. A. (1998). Psychosocial factors and high-risk sexual behavior: Race differences among urban adolescents. *Journal of Behavioral Medicine, 21*, 451–467.
- Dukes, R. L., Stein, J. A., & Zane, J. I. (2010). Gender differences in the relative impact of physical and relational bullying on adolescent injury and weapon carrying. *Journal of School Psychology, 48*, 511–532.
- DuRant, R. H., Pendergrast, R. A., & Cadenhead, C. (1994). Exposure to violence and victimization and fighting behavior by urban black adolescents. *Journal of Adolescent Health, 15*, 311–318.
- Eaton, D. K., Kann, L., Kinchen, S., Shanklin, S., Ross, J., Hawkins, J., . . . Wechsler, H. (2010). Youth risk behavior surveillance—United States, 2009. *Morbidity and Mortality Weekly Report (MMWR), Surveillance Summaries, 59(SS05)*, 1–142. Retrieved from <http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5905a1.htm>
- Ellickson, P., Saner, H., & McGuigan, K. A. (1997). Profiles of violent youth: Substance use and other concurrent problems. *American Journal of Public Health, 87*, 985–991.
- Fergus, S., & Zimmerman, M. A. (2005). Adolescent resilience: A framework for understanding healthy development in the face of risk. *Annual Review of Public Health, 26*, 399–419.
- Ford, J. D., Elhai, J. D., Connor, D. F., & Frueh, B. C. (2010). Polyvictimization and risk of posttraumatic, depressive, and substance use disorders and involvement in delinquency in a national sample of adolescents. *Journal of Adolescent Health, 46*, 545–552.
- Foshee, V. A., Linder, F., MacDougall, J. E., & Bangdiwala, S. (2001). Gender differences in the longitudinal predictors of adolescent dating violence. *Preventive Medicine, 32*, 128–141.
- Foshee, V. A., & Matthew, R. A. (2007). Adolescent dating abuse perpetration: A review of findings, methodological limitations, and suggestions for future research. In D. J. Flannery, A. T. Vazjoni, and I. D. Waldman (Eds.), *The Cambridge Handbook of Violence Behavior and Aggression* (pp. 431–449). New York, NY: Cambridge.
- Foshee, V. A., McNaughton Reyes, H. L., Ennett, S. T., Suchindran, C., Mathias, J. P., Karriker-Jaffe, K. J., . . . Benefield, T. S. (2011). Risk and protective factors distinguishing profiles of adolescent peer and dating violence perpetration. *Journal of Adolescent Health, 48*, 344–350.
- Harris, K. M., Florey, F., Tabor, J., Bearman, P. S., Jones, J., & Udry, J. R. (2003). *The National Longitudinal Study of Adolescent Health: Research Design*. Retrieved from <http://www.cpc.unc.edu/projects/addhealth>
- Jain, S., Buka, S. L., Subramanian, S. V., & Molnar, B. E. (2010). Neighborhood predictors of dating violence victimization and perpetration in young adulthood: A multilevel study. *American Journal of Public Health, 100*, 1737–1744.
- Jessor, R. (1991). Risk behavior in adolescence: A psychosocial framework for understanding and action. *Journal of Adolescent Health, 12*, 597–605.
- Johnson, S. B., Frattaroli, S., Wright, J. L., Pearson-Fields, C. B., & Cheng, T. L. (2004). Urban youths' perspectives on violence and the necessity of fighting. *Injury Prevention, 10*, 287–291.
- Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2007). *Monitoring the Future national survey results on drug use, 1975–2006. Volume I: Secondary school students*. Bethesda MD: National Institute on Drug Abuse.
- Klostermann, K. C., & Fals-Stewart, W. (2006). Intimate partner violence and alcohol use: Exploring the role of drinking in partner violence and

- its implications for intervention. *Aggression and Violent Behavior*, *11*, 587–597.
- Knight, J. R., Sherritt, L., Shrier, L. A., Harris, S. K., & Chang, G. (2002). Validity of the CRAFFT substance abuse screening test among adolescent clinic patients. *Archives of Pediatric and Adolescent Medicine*, *156*, 607–614.
- Kraemer, H. C., Kazdin, A. E., Offord, D. R., Kessler, R. C., Jensen, P. S., & Kupfer, D. J. (1997). Coming to terms with the terms of risk. *Archives of General Psychiatry*, *54*, 337–343.
- Latimer, W. W., Winters, K. C., & Stinchfield, R. D. (1997). Screening for drug abuse among adolescents in clinical and correctional settings using the Problem-Oriented Screening Instrument for Teenagers. *American Journal of Drug and Alcohol Abuse*, *23*, 79–98.
- McCormick, M. C., Kass, B., Elixhauser, A., Thompson, J., & Simpson, L. (2000). Annual report on access to and utilization of health care for children and youth in the United States—1999. *Pediatrics*, *105*, 219–230.
- Melzer-Lange, M., & Lye, P. S. (1996). Adolescent health care in a pediatric emergency department. *Annals of Emergency Medicine*, *27*, 633–637.
- Miller, S., Gorman-Smith, D., Sullivan, T., Orpinas, P., & Simon, T. R. (2009). Parent and peer predictors of physical dating violence perpetration in early adolescence: Tests of moderation and gender differences. *Journal of Clinical Child & Adolescent Psychology*, *38*, 538–550.
- Miller, S., Malone, P. S., & Dodge, K. A., & the Conduct Problems Prevention Research Group. (2010). Developmental trajectories of boys' and girls' delinquency: Sex differences and links to later adolescent outcomes. *Journal of Abnormal Child Psychology*, *38*, 1021–1032.
- Molnar, B. E., Cerda, M., Roberts, A. L., & Buka, S. L. (2008). Effects of neighborhood resources on aggressive and delinquent behaviors among urban youths. *American Journal of Public Health*, *98*, 1086–1093.
- Molnar, B. E., Roberts, A. L., Browne, A., Gardener, H., & Buka, S. L. (2005). What girls need: Recommendations for preventing violence among urban girls in the US. *Social Science & Medicine*, *60*, 2191–2204.
- Moos, R. R., Insel, P. M., & Humbrey, B. (1974). *Preliminary manual for the family environmental scales*. Palo Alto, CA: Consulting Psychologists Press.
- Nansel, T. R., Overpeck, M. D., Haynie, D. L., Ruan, W. J., & Scheidt, P. C. (2003). Relationships between bullying and violence among US youth. *Archives of Pediatrics & Adolescent Medicine*, *157*, 348–353.
- Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling: A Multidisciplinary Journal*, *14*(4), 535–569.
- Pihl, R., & Hoaken, P. (2002). Biological bases to addiction and aggression in close relationships. In C. Werkele & A. Wall (Eds.), *The violence and addiction equation: Theoretical and clinical issues in substance abuse and relationship violence* (pp. 25–43). New York, NY: Brunner/Mazel.
- Rahdert, E. R. (1991). Problem-oriented screening instrument for teenagers. In E. R. Rahdert (Ed.), *The Adolescent Assessment/Referral System Manual*. Rockville, MD: National Institute on Drug Abuse.
- Ranney, M. L., & Mello, M. J. (2011). A comparison of female and male adolescent victims of violence seen in the emergency department. *Journal of Emergency Medicine*, *41*, 701–706.
- Ranney, M. L., Whiteside, L., Walton, M. A., Chermack, S. T., Zimmerman, M. A., & Cunningham, R. M. (2011). Sex differences in characteristics of adolescents presenting to the emergency department with acute assault-related injury. *Academic Emergency Medicine*, *18*, 1027–1035.
- Reese, L. E., Vera, E. M., Thompson, K., & Reyes, R. (2001). A qualitative investigation of perceptions of violence risk factors in low-income African American children. *Journal of Clinical Child Psychology*, *30*, 161–171.
- Resko, S. M., Walton, M. A., Bingham, C. R., Shope, J. T., Zimmerman, M., Chermack, S. T., . . . Cunningham, R. M. (2010). Alcohol availability and violence among inner-city adolescents: A multi-level analysis of the role of alcohol outlet density. *American Journal of Community Psychology*, *46*, 253–262.
- Resnick, M. D., Ireland, M., & Borowsky, I. (2004). Youth violence perpetration: What protects? What predicts? Findings from the National Longitudinal Study of Adolescent Health. *Journal of Adolescent Health*, *35*, 424.e1–424.e10. Retrieved from [http://www.journals.elsevierhealth.com/periodicals/jah/article/S1054-139X\(04\)00165-X/fulltext](http://www.journals.elsevierhealth.com/periodicals/jah/article/S1054-139X(04)00165-X/fulltext)
- Rothman, E. F., Johnson, R. M., Azrael, D., Hall, D. M., & Weinberg, J. (2010). Perpetration of physical assault against dating partners, peers, and siblings among a locally representative sample of high school students in Boston, Massachusetts. *Archives of Pediatric and Adolescent Medicine*, *164*, 1118–1124.
- Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *American Journal of Orthopsychiatry*, *57*, 316–331.
- Saunders, J. B., Aasland, O. G., Babor, T. F., de la Fuente, J. R., & Grant, M. (1993). Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO Collaborative Project on Early Detection of Persons with Harmful Alcohol Consumption—II. *Addiction*, *88*, 791–804.
- Silverman, J. G., Raj, A., Mucci, L. A., & Hathaway, J. E. (2001). Dating violence against adolescent girls and associated substance use, unhealthy weight control, sexual risk behavior, pregnancy, and suicidality. *JAMA: The Journal of the American Medical Association*, *286*, 572–579.
- Straus, M. A. (1979). Measuring intrafamily conflict and violence: The Conflict Tactics (CT) Scales. *Journal of Marriage and Family*, *41*, 75–88.
- Straus, M. A. (1999). The Conflict Tactics (CT) Scales. In M. A. Straus, R. J. Gelles, & C. Smith (Eds.), *Physical violence in American families; risk factors and adaptations to violence in 8,145 families*. New Brunswick, NJ: Transaction.
- Straus, M. A., Hamby, S. L., Boney-McCoy, S., and Sugarman, D. B. (1996). The Revised Conflict Tactics Scales (CTS2): Development and preliminary psychometric data. *Journal of Family Issues*, *17*, 283–316.
- Swahn, M. H., & Donovan, J. E. (2004). Correlates and predictors of violent behavior among adolescent drinkers. *Journal of Adolescent Health*, *34*, 480–492.
- Swahn, M. H., Simon, T. R., Hertz, M. F., Arias, I., Bossarte, R. M., Ross, J. G., . . . Hamburger, M. E. (2008). Linking dating violence, peer violence, and suicidal behaviors among high-risk youth. *American Journal of Preventive Medicine*, *34*, 30–38.
- Temple, J. R., & Freeman, D. H., Jr. (2011). Dating violence and substance use among ethnically diverse adolescents. *Journal of Interpersonal Violence*, *26*, 701–718.
- Turner, C. F., Ku, L., Rogers, S. M., Lindberg, L. D., Pleck, J. H., & Sonenstein, F. L. (1998). Adolescent sexual behavior, drug use, and violence: Increased reporting with computer survey technology. *Science*, *280*, 867–873.
- Voisin, D. R., Bird, J. D. P., Hardestry, M., & Shiu, C. S. (2011). African American adolescents living and coping with community violence on Chicago's Southside. *Journal of Interpersonal Violence*, *26*, 2483–2498.
- Walton, M. A., Chermack, S. T., Shope, J. T., Bingham, C. R., Zimmerman, M. A., Blow, F. C., & Cunningham, R. M. (2010). Effects of a brief intervention for reducing violence and alcohol misuse among adolescents: A randomized controlled trial. *Journal of the American Medical Association*, *304*, 527–535.
- Walton, M. A., Cunningham, R. M., Goldstein, A. L., Chermack, S. T., Zimmerman, M. A., Bingham, C. R., . . . Blow, F. C. (2009). Rates and correlates of violent behaviors among adolescents treated in an urban emergency department. *Journal of Adolescent Health*, *45*, 77–83.
- Webb, P. M., Zimet, G. D., Fortenberry, J. D., & Blythe, M. J. (1999). Comparability of a computer-assisted versus written method for collecting health behavior information from adolescent patients. *Journal of Adolescent Health*, *24*, 383–388.
- Wells, S., & Graham, K. (2003). Aggression involving alcohol: Relationship to drinking patterns and social context. *Addiction*, *98*, 33–42.
- White, H., Jackson, K., & Loeber, R. (2009). Intimate partner violence

- and alcohol use: Exploring the role of drinking in partner violence and its implications for intervention. In M. Krohn, A. Lizotte, & G. Hall (Eds.), *Handbook on crime and deviance* (pp. 443–468). New York, NY: Springer.
- Whiteside, L. K., Walton, M. A., Stanley, R., Resko, S. M., Chermack, S. T., Zimmerman, M. A., & Cunningham, R. M. (2009). Dating aggression and risk behaviors among teenage girls seeking gynecologic care. *Academic Emergency Medicine, 16*, 632–638.
- Wiebe, D., Blackstone, M., Mollen, C., Culyba, A., & Fein, J. (2011). 133. Self-reported violence-related outcomes for adolescents within eight weeks of emergency department treatment for assault injury. *Journal of Adolescent Health, 48*(2), Supplement, S86–S87.
- Wolfe, D. A., Scott, K., Reitzel-Jaffe, D., Wekerle, C., Grasley, C., & Straatman, A.-L. (2001). Development and validation of the Conflict in Adolescent Dating Relationships Inventory. *Psychological Assessment, 13*, 277–293.
- Zun, L. S., Downey, L., & Rosen, J. (2005). Who are the young victims of violence? *Pediatric Emergency Care, 21*, 568–573.