

Original Research

Self-Harm and its Link to Peer and Dating Violence among Adolescents in a High-Risk Urban Community

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Abstract: Associations between self-harm and peer and dating violence perpetration and victimization among youth in a high-risk community are examined. Cross-sectional logistic regression analyses are based on data from the Youth Violence Survey, conducted in 2004, and administered to over 80% of public school students in grades 7, 9, 11, and 12 (N=4,131) in an urban school district. Findings show that 20.3% of students reported engaging in self-harm during the previous 12 months. Moreover, self-harm was associated with peer violence perpetration and victimization for both boys and girls, and also with dating violence perpetration among boys and girls. Future research and prevention programs should consider the developmental and behavioral characteristics of adolescents who engage in both self-harm and interpersonal violence.

Key words: self-injury, peer violence perpetration, peer violence victimization, dating violence perpetration, dating violence victimization

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Self-harm is the intentional injuring of one's own body. The term is used to describe a variety of behaviors and different intentions, including self-mutilation and self-poisoning with either suicidal or nonsuicidal intent. Although there is a complex interrelation between suicidal and nonsuicidal behavior (Muehlenkamp & Kerr, 2010), an estimated 70% of adolescents who engage in repetitive self-harm behavior attempt suicide in their lifetime (Nock et al., 2006). In 2007, 395,320 non-fatal injuries were treated in

U.S. emergency departments due to self-harm, including suicide attempts and other intentional self-harm (Centers for Disease Control and Prevention [CDC], 2009). However, findings based on hospital emergency departments likely underestimate the magnitude of self-harm. Primarily, self-harm is a prevalent and a complex problem that affects adolescents and young adults (Cook, Clancy, & Sanderson, 2004; Fliege, Lee, Grimm, & Klapp, 2009; Jacobson & Gould, 2007; Ross & Heath, 2002; Webb, 2002). One study in England found that only one in ten children and adolescents who harm themselves present to hospital following the episode (Hawton, Rodham, Evans, & Weatherall, 2002).

Moreover, self-harm without the intent to die appears to be more prevalent than self-harm with intent to die (suicidal behavior) among adolescents (Hawton & Harriss, 2008). According to 2001 data, the fatal injury rate from self-harm was 9.2 per 100,000 and the nonfatal injury rate

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from self-harm was 377.1 per 100,000 among youth between 10 to 19 years of age in the U.S.; and during 2001-2003, the ratio of fatal to nonfatal self-harm injury rates was 1.2 to 84.2 respectively, both per 100,000 population among youth aged between 10 to 14 years of age in the U.S. (Vajani, Annett, Crosby, & Millet, 2007). A recent international systematic review of the prevalence of suicidal phenomena in adolescents found that 9.7% reported a suicide attempt during their lifetime while 13.2% reported a lifetime prevalence of suicidal or non-suicidal self-harm behavior (Evans, Hawton, Rodham, & Deeks, 2005). The estimated lifetime prevalence of self-harm behavior that is described as non-suicidal self-injury ranges between 13.0% and 23.2% among adolescents (Jacobson & Gould, 2007), although at least one community sample reported higher levels of non-suicidal self-harm (46.5%) among adolescents (Lloyd-Richardson, Peerine, Dierker, & Kelley, 2007).

Many explanations have been offered for self-harming behaviors, and typically these behaviors serve to regulate emotion and to elicit attention (Jacobson & Gould, 2007; Lowenstein, 2005). More specifically, Horne and Csipke (2009) found that self-harm affects emotional awareness, sense of self/reality, and body-based experience. In addition, self-harm resolves inhibition of expressive behavior, tension, agitation, immobilization or lost function among certain individuals (Horne & Csipke, 2009). A cross-sectional study from seven countries showed that self-harming behaviors may have underlying motives of either 'cry of pain motive' (e.g., to die, to punish oneself, and to get relief from a terrible state of mind) or 'cry for help motive' (e.g., to frighten someone, and to get attention) (Scoliers et al., 2008). Another study suggests that adolescents who engage in self-harming behaviors may feel the need for help, but may be less likely to ask for help from family members and teachers; however, they may be more likely to seek help from their friends (Evans, Hawton, & Rodham, 2005). Other reasons for self-harming behaviors have been documented, including attention-getting, releasing of negative emotions and to feel pain, conflicts with family and relationships, and sexual problems. Self-harm has also been reported by individuals as means of expressing self-directed anger or resisting suicidal thoughts (Klonsky & Muehlenkamp, 2007). Several studies have shown that self-harm is significantly related to lack of communication skills and coping strategy skills (Milnes, Owens, & Blenkinsop, 2002). A previous study has found that self-harming behaviors are employed by individuals to signal distress, distract from painful feelings, and punish self when other communication strategies such as speaking, yelling, and crying have failed (Nock, 2008).

The most common forms of self-harming behaviors include cutting, scratching, self-hitting (Nixon, Cloutier, & Jansson, 2008), self-poisoning, and overdosing (Lowenstein, 2005; Vajani et al., 2007). Individuals who engage in self-harming behaviors often suffer from psychological problems including depression, anxiety, impulsivity, low self-esteem, suicidal ideation (Dougherty et al., 2009; Lowenstein, 2005; Fliege et al., 2009; Portzky & van Heeringen, 2007; Nixon et al., 2008; Skegg, 2005; Hawton et al., 2002; Vajani et al., 2007), and share features with borderline personality disorder (Jacobson, Muehlenkamp, Miller, & Turner, 2008; Krysinska, Heller, & De Leo, 2006; Klonsky, Oltmanns, & Turkheimer, 2003). Despite an increased awareness in the community at large of self-harming behaviors among adolescents (Jacobson & Gould, 2007), and a dramatic growth over the past decade in terms of research dedicated specifically to self-harm, information from epidemiological studies of the interpersonal violence risk factors and correlates of self-harm remain relatively scarce (Laye-Gindhu & Schonert-Reicht, 2005; Lloyd-Richardson et al., 2007).

The association between non-suicidal self-harm behaviors and suicidal behaviors have been well documented, and it is clear that self-harm is a major risk factor for suicide (Cooper et al., 2005; Hawton & van Heeringen, 2009; Nruham, Larsson, & Sund, 2008; Suominen, Isometsä, Haukka, & Lönnqvist, 2004). Previous research findings highlight that factors such as sexual abuse, depression, anxiety, hostility, suicidal ideation and suicidal behaviors are also important correlates of self-harm (Jacobson & Gould, 2007). Child maltreatment, in particular sexual abuse, has been examined as an important predictor of self-harm (Fliege et al., 2009; Glassman et al., 2007; Jacobson & Gould, 2007). Other risk factors associated with self-harm include self-harming behaviors by friends, exposure to self-harming behaviors by family members (Hawton et al., 2002), intoxication, and substance abuse (Rossow et al., 2007; Skegg, 2005; Hawton et al., 2002). Studies have also found that being female, non-Hispanic ethnicity, low socio-economic status, behavior problems, somatic problems, eating disorders, thought problems, delinquent behavior, substance use, and aggressive behavior are associated with adolescent's suicide ideation and self-harm behavior (Berman, Schwartz, 1990; Bhui, McKenzie, Rasul, 2007; Eaton et al., 2005; McKenry, Tishler, Kelley, 1989; Shin et al., 2009; Sourander et al., 2006; Swahn et al., 2008b).

Research findings also show that there are associations between self-harm behavior and peer victimization, poor emotion regulation, and poor communication skills (Garisch & Wilson, 2009; Fortune, Sinclair, & Hawton, 2008). Several of these same factors (poor emotion regulation, lack of

communication skills, and previous victimization) are also linked to an increased likelihood of involvement in interpersonal violence. Self-harming adolescents often lack coping strategies when faced with difficulties, and show disinterest and avoidant behaviors in those situations. All of these factors, when taken as a whole, suggest that adolescents who engage in self-harm may be at increased risk for both being perpetrators (e.g., these individuals may become agitated or aggressive when confronted about their behavior) and victims (e.g., they may be perceived by potential perpetrators as distracted and vulnerable) of violence across relationship contexts.

However, relatively limited research has examined the link between self-harm and interpersonal violence even broadly defined to include bullying victimization (Brunner et al., 2007; Garisch & Wilson, 2009). To date, no study appears to have examined the extent to which adolescents who self-harm are also involved in violence perpetration and victimization across relationship contexts (peer and date), even though the circumstances and functions for self-harming behaviors seem likely to be exacerbated by peer and dating relationship conflicts and problems. Research shows that self-harm is associated with both antisocial behaviors and anger control problems (Laye-Gindhu & Schinert-Reicht, 2005), but it is unknown whether these antisocial behaviors and anger control problems also increase the risk for perpetrating or being victims of violence across relationship contexts. Previous research reported that nonfatal suicidal behaviors, which represent a subcategory of self-harm, were strongly associated with both peer and dating violence perpetration and victimization in a community sample of high-risk adolescents (Swahn et al., 2008b). Also, it is unknown whether self-harm contributes to increased risk of violence when also considering the effect of suicide attempts. Very little research has sought to examine the characteristics and risk behaviors that contribute to self-harm, while considering the impact of previous suicidal history (Csorba et al., 2009; Dougherty et al., 2009). Some researchers have distinguished suicidal from non-suicidal self-harm (Skegg, 2005). Some of the factors associated non-suicidal self-harm, such as a feeling of wanting to punish oneself, may be connected to why one type of self-harm differs from the other in regard to its link to interpersonal violence. There are several ways that self-harm and interpersonal violence could be associated. Self-harm could contribute to risk for interpersonal violence; conversely, interpersonal violence could contribute to risk for self-harm; or the two phenomena could be connected via some other factor(s). Moreover, there is also theoretical support for why self-harm may be linked to interpersonal violence. In particular, Joiner's

interpersonal-psychological theory, posits that non self-preservation behavior, such as self-injury and suicide, results when an individual has that desire and capability to act on that desire (Ribeiro & Joiner, 2009). Desire is a function of thwarted belongingness and perceived burdensomeness, and capability comes from acquired habituation to pain through repeated exposure to painful events (Joiner, 2005) and can also be conceptualized as exposure to violence, including previous child maltreatment. There are two overarching research questions guiding the current study. First, what are the demographic and psychosocial correlates of self-harm among youth in a high-risk community? Second, to what extent is self-harm associated with peer and dating violence perpetration and victimization among boys and girls in a high-risk community when considering the impact of potential confounders, including previous suicide attempts? The current study examines the association between self-harm and violence outcomes while controlling for several important demographic factors and psychosocial confounders (i.e., grade, race/ethnicity, gender, family composition, alcohol and drug use, weapon carrying, peer date violence perpetration, child maltreatment, social support, impulsivity, sadness and suicide attempts). Findings from this study will add to the relatively limited knowledge about the link between self-harm and violent behaviors, which can guide prevention and intervention programs that seek to reduce involvement in high-risk behaviors among adolescents.

Method

Participants

The "Youth Violence Survey: Linkages among Different forms of Violence" was administered to all public school students enrolled in grades 7, 9, 11 and 12 in a school district in a high-risk community in the U.S in 2004. The details of the study have been described elsewhere (Bossarte, Simon, & Swahn, 2008; Swahn, Simon, Arias, & Bossarte, 2008). The school district was identified and selected using community indicators of risk (i.e., poverty, unemployment, single parent households, and serious crimes), it was racially and ethnically diverse, and it was located in a city with a population of less than 250,000. This district operated 16 schools (elementary, middle, high schools, alternative schools) which all agreed to participate in the study. Within these 16 schools, all students in grades 7, 9, 11, and 12 were invited to participate. Students in grades 11 and 12 were grouped to produce a sufficient number of participants in the oldest of the three age groups.

Procedures

Data collection occurred in April, 2004. Students voluntarily completed the anonymous, self-administered 174-item questionnaire in classrooms during a 40-minute class period. Students without parental permission or who did not want to participate in the study were assigned individual deskwork (by the classroom teacher), which they completed at their desks or at an alternate location designated by the school during the survey administration. The questionnaire, an optically scannable booklet in multiple-choice format, was administered by highly experienced field staff. All English-speaking students in the targeted grades were invited to participate in the study. However, students who could not complete the questionnaire independently (e.g., enrolled in a special education class, required the assistance of a translator, had cognitive disabilities that would prevent adequate understanding and responding to the survey) (n=151), or who were no longer attending school (e.g., had dropped out of school, had been expelled, or were on long-term out-of-school suspension) (n=202), were ineligible to participate in the study.

Prior to data collection, active, signed, written parental permission, and student assent were required for all students under 18 years of age to participate in the study. Students aged 18 years or older provided written consent prior to participating in the survey. Parental permission forms were provided in English, Spanish, and other major languages as requested by the schools. Students received a \$5 gift card for returning the parental permission form regardless of whether the parent approved or denied the student's participation in the survey. Students who completed the survey received an additional \$5 gift card. Return of the parental permission form by invited students was high (86% of students returned the form), and parent and student refusals were very low (approximately 1% each). Of the 5,098 students who met eligibility criteria, 4,131 participated, yielding a participation rate of 81%: 1,491 in 7th grade (83.0%), 1,117 in 9th grade (73.4%), and 1,523 in 11th and 12th grades combined (79.0%). The study received IRB approval from the Centers for Disease Control and Prevention and ORC Macro International. IRB approval was also obtained at Georgia State University for continuation of secondary analyses of these data.

Measures

Self-harm was assessed through a single item question which asked participants the number of times that they had deliberately harmed or injured themselves in the past 12 months, even if they did not intend to die. Responses were

dichotomized to reflect any versus no involvement in self-harm.

Four outcome measures were examined in this study – peer violence perpetration, peer violence victimization, dating violence perpetration, and dating violence victimization. The outcome measures were adapted from Foshee and colleagues (1996) and the modifications are described elsewhere (Swahn et al., 2008a). Basically, same-sex peer violence perpetration and victimization were assessed through two identical 10-item scales to determine if participants had experiences with certain forms of violence (e.g., scratched, hit or slapped, threw something that could hurt, slammed or held against wall, and kicked) in the past 12 months. Response options for each scale were: never, 1-3 times, 4-9 times, and 10 or more times. Due to the skewed nature of the distribution of these variables, dichotomous outcome measures were created to indicate any versus no peer violence perpetration (30%) or victimization (35%). The dating violence perpetration and victimization measures were assessed through two 10-item scales that were worded similarly as the peer violence perpetration and victimization questions (e.g., scratched, hit or slapped, threw something that could hurt, slammed or held against wall, and kicked) but changed for context, and only asked from participants who had dated in the past 12 months. Responses to these scales were also dichotomized to indicate any versus no involvement in either dating violence perpetration (25%) or victimization (31%).

Psychosocial and Behavioral Correlates

A range of psychosocial characteristics were included in the analyses because they have been empirically or theoretically associated with self-harm or violent behaviors in previous research and therefore may be confounders. The nine psychosocial correlates assessed include suicide attempts, binge drinking, illicit drug use, weapon carrying, sadness, social support, impulsivity, peer dating violence, and child maltreatment. Consistent with existing surveys of adolescent risk behaviors (i.e. YRBS), suicide attempt was assessed as having attempted suicide at least once in the past year. Binge drinking was measured as having five or more drinks at any time in past year versus no binge drinking. Illicit drug use was measured as using inhalants or illegal drugs such as marijuana, cocaine, or heroin in the past year. Weapon carrying was measured as having carried a weapon such as gun, knife or club in the past month (YRBS, 2009). Sadness, a continuous measure, was assessed through a modified 6-item scale assessing how many times participants had been sad, grouchy or irritable or moody, hopeless about the future, not eating, sleeping more or less than usual, and had difficulty concentrating in the past 30 days

(Orpinas, 1993). A continuous scale of 9-item measure of social support, taken from the Vaux, Social Support Scale (Dahlberg, Toal, Swahn, & Behrens, 2005; Holder & Vaux, 1998; Vaux, 1988), was used to indicate support through peers, family and school contexts. Impulsivity, continuous measure, was assessed through a 4-item scale determining whether participants had a hard time sitting, a hard time finishing things, doing things without thinking, and using a lot of self-control to keep out of trouble (Bosworth & Espelage, 1995). Peer dating violence was measured by one question asking if close friends hit or slapped their boyfriends/girlfriends in the past year (Multisite Violence Prevention Project, 2004). Responses to the item were dichotomized indicating that none versus few, some, most or all of friends perpetrated violence against someone they had dated. Finally, child maltreatment was assessed through a 3-item scale of exposure to domestic violence, or physical or sexual victimization prior to age 10 indicating any versus no child maltreatment.

In addition, several demographic characteristics and potential confounders were included in the multivariate analyses – grade level, sex, race/ethnicity, low academic grade performance, low parental monitoring, and low parental support. Grade level was coded as 7th grade, 9th grade, or 11th/12th grades. Sex was dichotomized as either male or female. Race/ethnicity was coded as Hispanic, African American, White, or Other. Low academic performance, measured on a 7-item scale, was dichotomized as mostly having A's and B's during the past 12 months versus not having mostly A's and B's. Low parental monitoring (Multisite Violence Prevention Project, 2004), a 4-item scale, assessed parents/guardians' awareness of participant's daily activities through administering and knowing where participant was going, with whom, returning time, and doing what activities, and low parental support, a 5-item scale, assessed parents/guardians' support through saying something nice, giving a hug or pat on the back or kiss, giving reward, giving special privilege, and doing something special. Both scales were measured on a Likert scale of 1 (almost never) to 3 (almost always), and dichotomized to reflect low parental monitoring versus not low parental monitoring, and low parental support versus not low parental support in the past 30 days.

Analyses

Chi-square analyses were computed to determine the associations between self-harm and demographic and psychosocial correlates. For the continuous measures (i.e., social support, sadness, and impulsivity), independent sample t-tests were computed to assess possible differences in the mean level of each variable for those engaging in self-

harm relative to those who did not. Multivariate logistic regression analyses were conducted to determine associations between self-harm and involvement in peer violence perpetration, peer violence victimization, dating violence perpetration, and dating violence victimization among adolescents while adjusting for the complete set psychosocial factors. Because patterns of interpersonal violence and self-harm behaviors vary by sex, analyses were stratified for boys and girls. Dating violence perpetration and dating violence victimization measures were limited to those adolescents who had dated in the past year (n=2,888). Missing data for variables other than demographic characteristics were imputed using the expectation-maximization method available in SAS (Version 9.13; SAS Institute Inc., Cary, NC) and analyses were conducted using SAS and SUDAAN.

Results

The overall prevalence of self-harm (in the past year) was 20.3% (23.9% for girls and 16.4% for boys). Among those who reported self-harm, 38.2% had also attempted suicide in the past year and the association between self-harm and suicide attempt was significant (OR=21.98; 95%CI:16.96-28.48). Additional demographic and psychosocial characteristics among those who reported any self-harm in the past year is presented in Table 1. Self-harm was significantly associated with all measures examined with the exception of grade level (Table 1). More specifically, self-harm was associated with gender, race/ethnicity, family composition, academic grade, suicide attempts, binge drinking, illicit drug use, weapon carrying, peer dating violence perpetration, child maltreatment, peer violence perpetration, peer violence victimization, dating violence perpetration, and dating violence victimization. Moreover, analyses examining the mean differences in social support, sadness, and impulsivity found significant differences for all three measures for those who reported self-harm versus those who did not. Of those students reporting self-harm, 57.1% (11.6% of all students) also reported engaging in multiple (2 or more) episodes during the preceding 12 months, 42.9% (8.7% of all students) reported a single episode.

Peer Violence Perpetration

Results from the bivariate logistic regression analyses indicate that self-harm was significantly associated with peer violence perpetration (OR=2.51; 95% CI: 2.14, 2.95) (analyses not shown). Multivariate logistic regression analyses show that self-harm was associated with peer violence perpetration (Adj. OR=1.81; 95% CI: 1.44, 2.27) after controlling for potential confounders among both boys and girls (Adj. OR=1.91; 95% CI: 1.37, 2.67 and Adj.

Table 1. Comparisons of demographic and psychosocial characteristics among those who reported any self-harm in the past year versus those who did not.

	Any Self-Harm (Past Year)				<i>p</i> -value*
	N	No % / Mean (SD)	N	Yes % / Mean (SD)	
<i>Gender</i>					
Girls	1579	76.1	496	23.9	<.0001
Boys	1594	83.6	312	16.4	
<i>Race/ethnicity</i>					<.0001
Hispanics	1370	78.5	375	21.5	
African Americans	930	86.0	151	14.0	
Whites	664	75.8	224	25.2	
Others	143	76.0	46	24.3	
<i>Grade</i>					ns
7 th	1104	78.7	298	21.3	
9 th	857	78.7	232	21.3	
11/12 th	1212	81.3	279	18.7	
<i>Family composition</i>					<.001
1 parent	1045	81.5	237	18.5	
2 parents	1270	81.1	296	18.9	
Multiple	861	75.9	274	24.1	
<i>Academic grades</i>					<.05
Mostly A's and B's	1568	78.2	437	21.8	
Mostly C's, D's and F's	1438	81.2	333	18.8	
<i>Suicide attempts</i>					<.0001
No	3084	86.2	492	13.8	
Yes	88	22.5	306	77.7	
<i>Binge drinking</i>					<.0001
No	2490	82.9	515	17.1	
Yes	673	69.7	293	30.3	
<i>Illicit drug use</i>					<.0001
No	2492	82.9	513	17.1	
Yes	642	69.6	281	30.4	
<i>Weapon carrying</i>					<.0001
No	2714	82.3	584	17.7	
Yes	447	67.0	220	33.0	
<i>Peer date violence perpetration</i>					<.0001
No	2406	82.3	519	17.7	
Yes	679	72.2	261	27.8	
<i>Child maltreatment</i>					<.0001
No	1965	87.7	276	12.3	
Yes	1218	69.5	534	30.5	
<i>Mean social support</i>	3187	2.22 (SD=0.49)	813	2.14 (SD=0.45)	<.0001
<i>Mean sadness</i>	3187	2.44 (SD=0.87)	813	3.31 (SD=0.91)	<.0001
<i>Mean impulsivity</i>	3187	2.27 (SD=0.93)	813	2.92 (SD=1.00)	<.0001
<i>Peer violence perpetration</i>					<.0001
No	2206	84.6	401	15.4	
Yes	855	68.7	390	31.3	
<i>Peer violence victimization</i>					<.0001
No	2158	85.0	382	15.0	
Yes	891	68.6	407	31.4	
<i>Date violence perpetration</i>					<.0001
No	1614	82.1	352	17.9	
Yes	462	64.2	258	35.8	
<i>Date violence victimization</i>					<.0001
No	1591	82.1	348	18.0	
Yes	558	65.7	292	34.4	

* Wald Chi-Square test of the association between demographic and psychosocial factors and self-harm for dichotomous variables and t-test for differences in means for continuous variables.

OR=1.77; 95% CI: 1.29, 2.43, respectively). Moreover, several of the potential confounders included in the model were also statistically significantly associated with peer violence perpetration among adolescents (i.e., illicit drug use, weapon carrying, impulsivity, peer dating violence perpetration, and child maltreatment), but findings varied for boys and girls (Table 2).

Peer Violence Victimization

Results from the bivariate logistic regression analyses indicate that self-harm was significantly associated with peer violence victimization (OR=2.58; 95% CI: 2.20, 3.03) (analyses not shown). Multivariate logistic regression analyses show that self-harm was associated with peer violence victimization (Adj. OR=1.67; 95% CI: 1.35, 2.08) after controlling for potential confounders among both boys and girls (Adj. OR=1.42; 95% CI: 1.03, 1.95 and Adj.

OR=1.89; 95% CI: 1.40, 2.56, respectively). Moreover, several of the potential confounders included in the model were also statistically significantly associated with peer violence victimization among adolescents (i.e., illicit drug use, weapon carrying, sadness, impulsivity, peer dating violence perpetration, and child maltreatment), although findings varied for boys and girls (Table 2).

Dating Violence Perpetration

Analyses of dating violence perpetration, restricted to those adolescents who reported dating in the past year (n=2,888) show that self-harm was significantly associated with dating violence perpetration in bivariate analysis (OR=2.56; 95% CI: 2.12, 3.10) (analyses not shown). Multivariate logistic regression analyses show that self-harm was associated with date violence perpetration (Adj. OR=1.64; 95% CI: 1.24, 2.18) after controlling for potential confounders among both boys and girls (Adj. OR=1.90; 95% CI: 1.22, 2.98 and Adj. OR=1.57; 95% CI: 1.08, 2.27, respectively). Moreover, several of the potential confounders included in the model were also statistically significantly associated with dating violence perpetration among adolescents (i.e., illicit drug use, weapon carrying, social support (protective), impulsivity, and peer dating violence perpetration, and child maltreatment), although findings varied for boys and girls (Table 2).

Dating Violence Victimization

Analyses of dating violence victimization show that self-harm was significantly associated with dating violence victimization in bivariate analysis (OR=2.39; 95% CI: 1.99, 2.87) (analyses

not shown). Multivariate logistic regression analyses show that self-harm was associated with dating violence victimization (Adj. OR=1.69; 95% CI: 1.31, 2.17) after controlling for potential confounders among girls (Adj. OR=2.41; 95% CI: 1.67, 3.48) but not among boys. Among girls, additional significant risk factors associated with date violence victimization were sadness, peer date violence and child maltreatment. Among boys, illicit drug use, weapon carrying, sadness, impulsivity (protective) peer date violence perpetration, and child maltreatment were associated with dating violence victimization (Table 2).

Discussion

This study examined the prevalence and psychosocial correlates associated with self-harm among high-risk adolescents. It also examined the associations between self-harm and peer violence perpetration and victimization and dating violence perpetration and victimization among adolescents in a high-risk community. The past year prevalence of self-harm among students in this study was relatively high, 20% overall (24% for girls and 16% for boys), when considering that earlier studies show that the life time prevalence of self-harm typically fall within the range of 13% and 23% (Jacobson & Gould, 2007). However, the ranges may also reflect the different age intervals used for reporting the prevalence of self-harm. The findings that self-harm was associated with many important demographic and psychosocial characteristics across individual, family and social levels are consistent with previous research indicating that adolescents who engage in self-harm experience a range of risk behaviors and emotional difficulties, including alcohol use, illicit drug use, and other delinquent behaviors (Cook et al., 2004; Fliege et al., 2009; Jacobson & Gould, 2007; Ross & Heath, 2002; Webb, 2002).

The main objective of the current study was to determine the extent to which self-harm was associated with violent perpetration and victimization across relationship contexts. The findings from the current study demonstrate that self-harm, while controlling for suicide attempts and other psychosocial correlates, was significantly associated with all four violence outcomes examined. Although these findings were based on cross-sectional data without the ability to assess the specific temporal ordering between violence and self-harm, they are supported by Joiner's interpersonal-psychological theory emphasizing that serious injuring of oneself occurs after an individual has acquired habituation to the physical and mental pain of self or others over time (Joiner, 2005; van Orden, Merrill, & Joiner, 2005).

Table 2. Associations between adolescents' self-harm and involvement in peer and dating violence perpetration and victimization.

	Peer Violence Perpetration	Peer Violence Victimization	Dating Violence Perpetration ¹	Dating Violence Victimization ¹
	Adj. OR (95% CI)	Adj. OR (95% CI)	Adj. OR (95% CI)	Adj. OR (95% CI)
Self-harm	1.81 (1.44, 2.27)	1.67 (1.35, 2.08)	1.64 (1.24, 2.18)	1.69 (1.31, 2.17)
Suicide attempt	0.85 (0.63, 1.16)	1.10 (0.82, 1.48)	1.33 (0.94, 1.89)	0.93 (0.66, 1.31)
Binge drinking	1.11 (0.89, 1.38)	0.83 (0.67, 1.02)	1.09 (0.85, 1.39)	1.12 (0.89, 1.41)
Illicit drug use	1.41 (1.15, 1.74)	1.42 (1.16, 1.74)	1.43 (1.13, 1.81)	1.63 (1.30, 2.04)
Weapon carrying	1.94 (1.55, 2.42)	1.27 (1.01, 1.59)	1.47 (1.12, 1.94)	1.29 (1.01, 1.66)
Sadness ²	1.05 (0.94, 1.17)	1.21 (1.09, 1.34)	1.08 (0.94, 1.23)	1.42 (1.25, 1.61)
Social support ²	0.98 (0.79, 1.22)	0.87 (0.70, 1.07)	0.74 (0.55, 0.99)	0.81 (0.62, 1.07)
Impulsivity ²	1.25 (1.14, 1.37)	1.26 (1.15, 1.37)	1.14 (1.02, 1.29)	0.97 (0.87, 1.08)
Peer date violence	2.26 (1.87, 2.72)	1.64 (1.36, 1.97)	3.20 (2.56, 4.00)	2.46 (1.99, 3.05)
Child maltreatment	1.41 (1.19, 1.68)	1.44 (1.21, 1.70)	1.33 (1.07, 1.66)	1.53 (1.25, 1.88)
Boys				
Self-harm	1.91 (1.37-2.67)	1.42 (1.03-1.95)	1.90 (1.22-2.98)	1.25 (0.88-1.78)
Suicide attempt	0.67 (0.39-1.16)	1.30 (0.75-2.24)	1.14 (0.60-2.19)	1.05 (0.68-1.62)
Binge drinking	1.30 (0.96-1.76)	0.75 (0.56-1.01)	0.94 (0.63-1.40)	1.23 (0.88-1.70)
Illicit drug use	1.55 (1.15-2.07)	1.54 (1.15-2.06)	1.18 (0.80-1.74)	1.84 (1.35-2.52)
Weapon carrying	1.52 (1.16-2.00)	1.16 (0.88-1.53)	1.52 (1.05-2.20)	1.59 (1.03-2.44)
Sadness ²	1.16 (0.99-1.36)	1.23 (1.06-1.44)	1.13 (0.91-1.41)	1.45 (1.22-1.73)
Social support ²	1.01 (0.74-1.36)	0.94 (0.70-1.25)	0.55 (0.35-0.85)	0.82 (0.54-1.24)
Impulsivity ²	1.32 (1.15-1.51)	1.30 (1.14-1.47)	1.26 (1.05-1.51)	0.83 (0.71-0.98)
Peer date violence	2.17 (1.60-2.94)	1.45 (1.07-1.96)	3.28 (2.25-4.80)	2.84 (2.14-3.78)
Child maltreatment	1.29 (1.01-1.65)	1.34 (1.05-1.70)	1.30 (0.91-1.85)	1.53 (1.15-2.05)
Girls				
Self-harm	1.77 (1.29-2.43)	1.89 (1.40-2.56)	1.57 (1.08-2.27)	2.41 (1.67-3.48)
Suicide attempt	1.00 (0.67-1.47)	0.96 (0.66-1.41)	1.43 (0.93-2.21)	0.85 (0.46-1.58)
Binge drinking	0.91 (0.67-1.25)	0.94 (0.69-1.28)	1.23 (0.89-1.70)	1.05 (0.75-1.47)
Illicit drug use	1.32 (0.98-1.78)	1.33 (0.99-1.78)	1.63 (1.19-2.22)	1.37 (0.99-1.91)
Weapon carrying	3.05 (2.04-4.55)	1.61 (1.07-2.40)	1.44 (0.94-2.20)	1.22 (0.89-1.68)
Sadness ²	0.94 (0.81-1.10)	1.15 (0.99-1.34)	1.04 (0.87-1.24)	1.41 (1.17-1.69)
Social support ²	0.93 (0.67-1.28)	0.75 (0.54-1.03)	1.00 (0.66-1.50)	0.78 (0.54-1.13)
Impulsivity ²	1.18 (1.03-1.34)	1.21 (1.06-1.37)	1.07 (0.91-1.25)	1.08 (0.93-1.26)
Peer date violence	2.37 (1.86-3.03)	1.74 (1.37-2.22)	3.47 (2.61-4.62)	2.24 (1.59-3.15)
Child maltreatment	1.58 (1.23-2.04)	1.60 (1.26-2.05)	1.36 (1.02-1.81)	1.50 (1.13-2.00)

¹ Among those who have dated in the past year; ² Continuous variable; AOR = Adjusted Odds Ratio; Analyses adjusted for sex, grade, race/ethnicity, and academic grade and parental monitoring and support. Reference categories are those who did not report self-harm, who did not attempt suicide, who did not binge drink, who did not use illicit drugs, who did not carry weapon, who did not have peers involved in dating violence perpetration, and who did not experience any child maltreatment.

In this regard, individuals who are exposed to violence perpetration and victimization are also at increased odds of engaging in self-harming behaviors. The findings also support previous research showing that intentional self-harm can be associated with aggression towards others (Vernberg, Jacobson, & Hershberger, 1999). The same research also showed that adolescents' attitudes that support aggression as status and a power enhancer are significantly associated with victimization of self and victimization of others.

Thus, the role of attitudes in self-harm and youth violence in this population need to be explored.

The findings from the current study also extend previous research by indicating that self-harm is significantly associated with both peer and dating violence perpetration and victimization among adolescents in a community setting. Previous research has found that suicide attempts are significantly associated with both peer and dating violence perpetration and victimization

(Swahn et al., 2008b). Intriguingly, suicide attempt was not associated with the four violence outcomes in any of the analyses examined in the current study after considering the impact of self-harm. In analyses (not shown), we recomputed the findings in Table 2 without the self-harm measure to determine the strength of the association between suicide attempt and the four violence outcomes with all other covariates included. In these analyses, with self-harm removed, suicide attempt was associated with peer violence victimization and dating violence perpetration, but not with peer violence perpetration or dating violence victimization. The finding that suicide attempt is no longer associated with some forms of violence may simply reflect the inclusion of a broader range of covariates in these models as compared to those conducted previously. Moreover, it is possible that self-harm is a more proximal risk factor for peer and dating violence perpetration and victimization among members of this age group which could be examined in prospective longitudinal studies. Future studies should also study aspects of self-harm or suicide attempts that specifically may contribute to involvement in violent behaviors and determine whether these associations are spurious because of shared etiology or underlying factors.

As has been identified in previous research (Hawkins et al., 1998), child maltreatment was an important risk factor for all forms of violence examined among both boys and girls in the current study. Similarly, report of peers' involvement in dating violence perpetration was also an important risk factor for all forms of violence examined among both boys and girls. Previous research has shown that peer influences are important and may serve to model delinquent and antisocial behaviors (Hawkins et al., 1998). However, in contrast to previous studies documenting strong associations between alcohol use and involvement in violent behaviors (Dembo et al., 1991; Huizinga & Jacob-Chien, 1998; Orpinas, Basen-Engquist, Grunbaum, & Parcel, 1995; Swahn & Donovan, 2004; White, Loeber, Stouthamer-Loeber, & Farrington, 1999), binge drinking was not associated with any of the violent outcomes examined in the multivariate analyses for this study.

Analyses stratified by sex show that self-harm and other psychosocial correlates were relatively similar for boys and girls, in terms of their association with peer violence perpetration and victimization. They were also similar for boys and girls for dating violence perpetration. The patterns varied significantly for boys and girls in regards to dating violence victimization. While self-harm was found to be associated with both dating violence perpetration and victimization among all adolescents, associations between self-harm and dating violence victimization were only significant for girls. The psychosocial correlates associated

with dating violence (either perpetration or victimization) also varied for boys and girls. In particular, there were fewer significant risk factors for violence observed in analyses stratified by girls, suggesting possibly that boys and girls have different experiences and factors that contribute to their involvement in dating violence. Future research need to explore possible gender differences in more detail to better understand these underlying and possibly modifiable factors that can help to inform prevention programs.

Limitations

There are several limitations that should be considered when interpreting the findings from this study. First, data were collected from students in a high-risk urban community and findings may not generalize to adolescents in other communities or those who have dropped out of school. Second, measures were self-reported and may reflect biases, especially under-reporting of sensitive behaviors. Third, analyses are also based on cross-sectional data; hence, temporal ordering between correlates and outcomes cannot be established. More specifically, the current analyses were constructed to examine self-harm as a risk factor for violence outcomes, however, it is equally plausible and important to examine self-harm as an outcome or consequence to involvement in violent behaviors. Longitudinal research is needed to determine the prospective associations between self-harm and involvement in violent behaviors across relationship contexts. Fourth, the current study did not investigate the type, frequency or severity of self-harm. Fifth, the study did not assess other potential confounders or mediators that may have been important when examining the association between self-harm and violent behaviors. Several factors previously linked to self-harm or violence, that may serve to mediate or moderate the observed associations (e.g., hostility, communication skills, anger control) were not available in the current survey, but should be examined in future research. Finally, many of the measures included in the analyses were based on brief questions rather than more comprehensive scales that may increase validity of the constructs.

Conclusions

This study shows that self-harm is significantly associated with risk for peer and dating violence perpetration and victimization among adolescents in a high-risk community. The findings imply that assessment and identification of self-harm might cue other violent behaviors among adolescents in this population. Therefore, targeting self-harm in prevention programs may reduce adolescents' likelihood of involvement in other

types of violent behaviors, especially if these programs seek to improve anger control, antisocial behaviors, and communication skills, since these have been found to be associated with self-harm (Garisch & Wilson, 2009; Fortune et al., 2008; Laye-Gindhu & Schinert-Reicht, 2005) and are likely underlying factors in the observed associations between self-harm and the violent outcomes examined in the current study. The findings also suggest that increased social support may reduce risk for involvement in dating violence perpetration among adolescent boys, which is yet another important area for future research.

Several different types of programs may have some success in addressing self-harming behavior either by directly addressing self-harm or indirectly by addressing the associated risk factors such as violence victimization. Guidelines for school response (Toste & Health, 2010) and family involvement through collaborative strengths-based brief therapy model (Selekman, 2010) may benefit self-harming adolescents. Also, clinical treatments that show some efficacy are the cognitive behavioral therapies (CBT), specifically the Dialectical Behavior Therapy (DBT) (Muehlencamp, 2006). In addition, individual and group CBT has been shown to prevent and reduce psychological harm (e.g., depression, post-traumatic stress disorder) among children and adolescents who show psychological symptoms following exposure to traumatic events. Such events may include physical or sexual abuse, school, community or domestic violence, natural disasters, or severe illnesses (Wethington et al., 2008).

Future research is clearly needed in the field of self-harm because of its high prevalence among youth and also because the range of psychosocial problems associated with this issue. Several important priorities have already been identified (Jacobsen & Gould, 2007), and with the increased interest in this topic, new and important but unaddressed issues keep emerging. Unfortunately, one of the main barriers to move the field forward appears to be the scarcity of available data sources that have included measures of non-suicidal self-injury or self-harm. It would be particularly beneficial if large scale surveys and surveillance systems incorporated a few measures of self-harm particularly among adolescents and young adults, so that the scope of the problem and its associated factors could be better monitored and explored. The State of Florida for example, has emphasized the need for surveillance of self-harm in adolescents and the need for interventional strategies to prevent self-harm (Institute for Child Health Policy, 2003). Lessons learned from their efforts may be used as models for other states or agencies that collect data from adolescents and young adults. Meanwhile, prevention and

intervention strategies for self-harm that involve research, clinical practice, and public health efforts to reduce risk factors for this complex and multifaceted problem need to be pursued and implemented more broadly (Cook et al., 2004).

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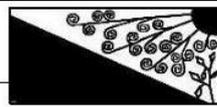
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