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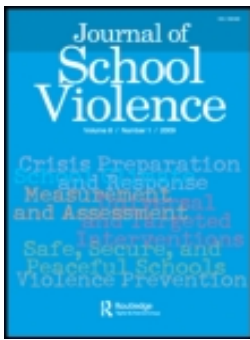
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## **Peer Victimization and Adolescent Adjustment: Does School Belonging Matter?**

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*Recent research highlights the role of peer victimization in students' adjustment across a variety of domains (e.g., academic, social), but less often identifies potential mediating variables. In the current study, we tested for direct effects from peer victimization to adolescents' academic behavior and alcohol use, as well as indirect effects through school belonging. Adolescents from two large samples (middle school: N = 2,808; high school: N = 6,821) self-reported on peer victimization, school belonging, academic outcomes (GPA, school truancy), and alcohol use (lifetime, past 30 days). Two-group structural equation models revealed (a) direct and indirect paths from peer victimization to academic functioning; (b) indirect, but not direct, effects through school belonging for lifetime*

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*drinking; and (c) direct and indirect effects from peer victimization to current drinking. Findings implicate school belonging as a mediator between peer victimization and important outcomes in adolescence.*

**KEYWORDS** *adolescence, peer victimization, school belonging, academic performance, academic truancy, alcohol use*

Throughout the school day, students are exposed to a variety of academic and social experiences. Victimization in school, particularly at the hands of peers, is an unfortunately common experience for many youth. Peer victimization is an overarching term that involves repeated negative interactions, either physical or verbal, between two or more individuals; bullying, a specific subset of victimization, is characterized by a notable power differential between two individuals in a dyad (Ladd, Kochenderfer, & Coleman, 1997). Estimates of peer victimization among school children are high, affecting a sizable portion of the school-age population (Card & Hodges, 2008; Walton, 2005). According to recent reports, 25% to 33% of school-age children in the United States report being bullied at school (National Center for Education Statistics and Bureau of Justice Statistics, 2010). Since students do not always report threats or acts of violence to school authorities, actual rates of victimization in schools are likely even higher than those documented (Isernhagen & Harris, 2003; Nekvasil & Cornell, 2012; Pergolizzi et al., 2009). Peer victimization is of particular concern because of its negative impact on students' functioning. Beginning as early as kindergarten, peer victimization is associated with both internalizing and externalizing problems (Card & Hodges, 2008; Khatri, Kupersmidt, & Patterson, 2000).

Although common across the school years, peer victimization is thought to peak in adolescence (Card & Hodges, 2008). During this developmental period, two domains of functioning have received considerable attention from both researchers and policy makers: illicit substance use and academic functioning. Initiation and continued use of illicit substances, particularly alcohol, is very common in adolescence (Johnston, O'Malley, Bachman, & Schulenberg, 2006), along with declines in school motivation and engagement (Corpus, McClintic-Gilbert, & Hayenga, 2009; Otis, Grouzet, & Pelletier, 2005). Given the profound impact of peer victimization on student outcomes within the educational context (e.g., Ladd et al., 1997), and the fact that a substantial portion of victimization takes place during the school day, it seems reasonable to hypothesize that students who are victimized will also exhibit less adaptive school adjustment. Indeed, studies suggest that victimized children exhibit poor academic functioning (Lee & Cornell, 2009).

The effects of victimization, however, do not dissipate at the end of the school day. Rather, the deleterious effects of being victimized may influence

students outside of the school context (i.e., spillover effect; e.g., Schwartz, Gorman, Duong, & Nakamoto, 2008). One such activity that has received increasing attention in connection with peer victimization is initiation and continued use of illicit substances. A handful of studies exploring relations between peer victimization and alcohol use have usually found positive associations between the two, particularly for alcohol initiation among middle school samples (for a review, see Topper & Conrod, 2011). Recent reviews call for an increase in attention paid to the posited associations between school-based victimization and alcohol initiation, as too few studies have explicitly examined these relations.

Increasing numbers of studies implicate peer victimization in the prediction of key developmental outcomes, both within and outside of the school domain. However, several important research questions remain unaddressed. First, few empirical studies have proposed explanatory mechanisms for the relation between these constructs (i.e., peer victimization with academic-related outcomes or alcohol use). Depressive symptoms (Luk, Wang, & Simons-Morton, 2010) and coping-related drinking motives (Topper, Castellanos-Ryan, Mackie, & Conrod, 2011) have been identified as mediating variables in the victimization-alcohol-use association. However, researchers have yet to consider school-related constructs that may mediate the relation between peer victimization and outcomes in adolescence. Additionally, researchers have not considered whether the same mediator is central to multiple outcomes related to peer victimization. In other words, could declines in school belonging be the explanatory factor in the association of peer victimization with poor school performance as well as the propensity to use alcohol? If so, such information could potentially have important implications for interventions developed to mitigate the deleterious effects of peer victimization. With these concerns in mind, one goal of the current study was to identify such a mediator. As victimization often takes place within the school context, we considered a school-based variable with important implications for adolescents' academic and nonacademic adjustment. We were particularly interested in investigating a school-based variable (i.e., perceptions of school belonging) because it may be more amenable to intervention efforts.

Second, most studies examining the impact of peer victimization have been limited to a single age group, particularly middle school. While victimization is pervasive during middle school, it is also relatively normative as adolescents transition into high school (Card & Hodges, 2008). Moreover, the outcomes examined in the current study (i.e., alcohol use and academic adjustment) are central concerns of school administrators for both age groups. Thus, we expanded upon prior work by examining the interrelations among peer victimization, academic functioning, and alcohol use in samples of both middle and high school students. Understanding the relation of victimization to outcomes across adolescence could have useful implications for research and educational practice.

## School Belonging as a Mediator

A notable limitation of the literature on peer victimization and outcomes, particularly with respect to alcohol use, is that few studies have empirically tested potential mechanisms underlying such associations (for exceptions, see Luk et al., 2010; Topper et al., 2011). In the present study, we examined students' feelings of belonging to the school community as a potential mediator. We focused on school belonging as it: (a) is based in the educational setting, where peer victimization also occurs; (b) encompasses relationships with peers, an important buffer against the negative outcomes of peer victimization (e.g., Asher, Brachial, & McDonald, *in press*; Ladd et al., 1997); (c) has been identified in past studies as a powerful predictor of outcomes such as academic achievement and substance use (e.g., Ladd et al., 1997); and (d) has been the successful target of past intervention efforts (e.g., Anderman, 2002).

School belonging is a multifaceted construct and warrants a brief consideration of its operationalization. School belonging (Anderman, 2002; Faircloth & Hamm, 2005; Goodenow, 1993; Goodenow & Grady, 1993; Osterman, 2000; Roeser, Midgley, & Urdan, 1996) has been labeled differently by various researchers, and is closely related to constructs such as emotional engagement (Finn, 1993; Fredricks, Blumenfeld, & Paris, 2004), perceptions of school climate (Waters, Cross, & Shaw, 2010), school connectedness (Bernat & Resnick, 2009; Resnick et al., 1997), school bonding (Jenkins, 1997), and sense of relatedness (Connell & Wellborn, 1991; Deci & Ryan, 1985; Furrer & Skinner, 2003). For the purposes of this study, we borrow from Libbey's (2004) definition of belonging as encompassing positive relationships with both peers and adults in the school context, as well as perceived feelings of safety and belonging at school. Accordingly, we refer to students' perceived connection to school as school belonging. However, we acknowledge that the same or similar construct may be captured by different terminology, particularly those previously mentioned.

The broad concept of school belonging has demonstrated important associations with outcomes of interest to the present study (Libbey, 2004; McNeely & Falci, 2004; Stearns & Glennie, 2010). As far back as Dewey (1958), school belonging has been posited as a critical determinant of students' academic success and engagement (Fredricks et al., 2004; Osterman, 2000; Roeser et al., 1996). Indeed, it is fundamental to sustaining important academic outcomes such as intrinsic motivation, which is strongly related to academic achievement (Deci & Ryan, 1985). Consequently, low perceptions of school belonging could trigger negative academic outcomes, including school truancy or dropout. Along these lines, lower perceptions of belonging and safety at school may increase risk for disengagement, evidenced by decreased effort and subsequent worsening of academic performance or increases in school truancy (Goodenow & Grady, 1993).

Lower perceptions of school belonging have also been associated with alcohol use (Brookmeyer, Fanti, & Henrich, 2006; Rice, Kang, Weaver, & Howell, 2008). Resnick and colleagues' (1997) seminal work with seventh-through twelfth-grade students provided compelling evidence for the protective role of school belonging (referred to in the study as school connectedness) against alcohol use. Feelings of school belonging were a more powerful predictor for lower rates of alcohol use than nonacademic contextual variables, including family support. However, it is important to note that the direction of causality has not been established between these two variables. For example, social control theory may suggest that delinquent behavior, such as alcohol use, would give rise to poor school bonding (Hirschi, 1969; Wiatrowski, Griswold, & Roberts, 1981). Thus, while we considered school belonging as a mediator in the current study, it is also quite possible that the relation between alcohol use and school belonging is bidirectional.

Finally, studies suggest an association between school belonging and peer victimization. Past research has linked perceptions of the school climate to feelings of school safety, such that students who endorse low levels of school belonging are more likely to feel unsafe at school (Derosier & Newcity, 2005). In addition, students who feel alienated from the school community may be less likely to report, or attempt to intervene in, instances of school victimization, perpetuating a culture of victimization in school (Brinkley & Saarnio, 2006).

Based on past research, school belonging is a critical component of adolescent adjustment with potential implications for peer victimization and academic adjustment. As such, school belonging might be a mediating mechanism connecting school-based peer victimization and academic outcomes (performance and truancy) and nonacademic outcomes (alcohol use). The current study adds to the well-established literature on school belonging by integrating work on school belonging and peer victimization with that focused on school belonging and alcohol use or academic-related outcomes.

### A Developmental Perspective

While substance use, academic achievement, and peer victimization remain substantial concerns across adolescence, there is a marked difference between the experiences of early and late adolescents (Graber, Brooks-Gunn, & Petersen, 1996). In particular, students experience very different educational and social contexts in the transition from middle to high school (Eccles, Lord, & Buchanan, 1996). However, associations between victimization and subsequent functioning have not been considered with these contextual changes in mind. Indeed, most studies examine students only in middle school or high school, with little consideration for potential



developmental differences. Considering developmental shifts in the relation between important variables is critical in light of differences in emotional and social functioning for individuals in early and late adolescence (Bachman, Johnston, O'Malley, & Schulenberg, 1996; Eccles et al., 1996).

In the present study, we examined the associations of peer victimization to academic functioning and substance use in middle and high school and whether differences would emerge between the two groups. There is evidence to suggest that differences may or may not be present. In support of potential differences, early and late adolescents differ notably in terms of some of the outcomes of interest in this study. For example, victimization is more common during middle school (Card & Hodges, 2008), but alcohol use is much more normative in later adolescence (Johnston et al., 2006). Academic truancy and dropping out is also more common in late adolescence, at an age when students can legally choose to drop out of school (Ianni & Orr, 1996). These differences may translate into differential associations between victimization and academic outcomes for middle and high school, an important factor to consider for intervention efforts in schools related to reducing substance use or bolstering academic performance. Conversely, many factors remain constant across significant school transitions, and continuity may be expected in the transition from middle to high school (Lerner et al., 1996). For example, school belonging is a concern for students throughout early and late adolescence. Declines in school belonging begin across the middle school transition but continue throughout adolescence (Oelsner, Lippold, & Greenberg, 2011). Thus, school belonging may be a critical mediating factor for both middle and high school students with respect to the impact of peer victimization. As such, victimization and adolescent functioning might be associated similarly for middle and high school students. We directly tested these two competing hypotheses in the present study.

### Current Study and Hypotheses

In the current study, we examined the association between peer victimization and maladaptive academic and alcohol outcomes. Direct paths from victimization to outcomes, as well as indirect paths through school belonging, were considered. Given past research, peer victimization was expected to positively relate to alcohol use, school truancy, and poor academic performance. School belonging was expected to be negatively associated with peer victimization and partially mediate the association of victimization with academic and alcohol-related outcomes. In addition, we examined potential developmental differences in the association between peer victimization and adolescent adjustment using two group models in middle and high school samples.



## METHOD

### Participants and Procedure

Full data on variables of interest were available for 2,808 middle school ( $M_{age} = 13.5$ ,  $SD_{age} = 0.9$ ) and 6,821 high school students ( $M_{age} = 15.8$ ,  $SD_{age} = 1.2$ ), constituting the final samples examined in the present study. Both samples were fairly gender balanced (middle school sample: 51.4% girls; high school sample: 48.5% girls) and students were represented equally across all grade levels (middle school: 51.2% seventh grade, 48.8% eighth grade; high school: 26.2% ninth grade, 26.1% tenth grade, 25.4% eleventh grade, 22.3% twelfth grade). The middle school sample was primarily White (64.8%) but also identified as Black/African American (3.3%), Hispanic/Latino (16.4%), Asian American (19.2%), Native Hawaiian/Pacific Islander (3.1%), American Indian/Alaskan Native (4.6%), or another racial or ethnic group (16.4%). Most students in the high school sample self-identified as White (63.9%), but also included a sizable portion of students who identified as Hispanic/Latino (11.0%) and Asian or Pacific Islander (16.1%). Smaller groups of students identified themselves as Black or African American (3.8%), American Indian/Native American (3.1%), or other. The middle school sample considered here was also used in an article exploring the moderating role of gender on positive and negative social relationships with respect to initiation and continued use of illicit substances (i.e., alcohol, cigarettes, and marijuana; Wormington, Anderson, Tomlinson, & Brown, 2012). In contrast to the Wormington et al. (2012) study, the current manuscript focused specifically on (a) examining school belonging as a mediator of peer victimization to two distinct outcomes: academic and alcohol-related and (b) considering the change in school belonging' role as a function of developmental stage.

Participants were recruited as part of the California Healthy Kids Survey (CHKS; WestEd, 2009) from four middle schools and five high schools in a socioeconomically diverse school district in the San Diego, California area. The median household income and unemployment rate within the school district (\$57,000 and 9%, respectively) are comparable to statewide rates. Data for this particular study were collected during the regular school cycle. Though the data were collected through the CHKS, we handled all aspects of data processing. Passive parental consent was received for 99% of students enrolled in the schools, and 95% of those students assented to take the survey. During school hours, assenting participants filled out an anonymous self-report questionnaire, including questions in the present study. Survey instructions were administered in class by trained university research staff. Students who indicated that they had not answered items truthfully on the survey via a survey item or responded to questions inconsistently were dropped from both the middle and high school data sets.

## Measures

All items were taken from the 2009 middle and high school versions of the CHKS (West Ed, 2009).

### PEER VICTIMIZATION

Participants were asked to mark, on a 4-point scale, the frequency with which they had been the targets of peer victimization within the last 12 months (1 = 0 times, 4 = 4 or more times; WestEd, 2009; cf. McGee, Valentine, Schulte, & Brown, 2011; Tharp-Taylor, Haviland, & D'Amico, 2009; Wormington et al., 2012). Because we were interested specifically in victimization occurring on school property, these instances of peer victimization were limited to those that had taken place at school. Items assessed both victimization ( $n = 8$ ) and bullying ( $n = 8$ ). Victimization items included questions concerning both physical victimization (e.g., been pushed, shoved, slapped, hit, or kicked by someone who wasn't just kidding around) and relational victimization (e.g., had mean rumors or lies spread about you). Bullying items queried students about being bullied for a variety of reasons, including being bullied due to race/ethnicity/national origin, religion, gender, sexuality, physical or mental disability, or any other reason. For bullying items, participants received the following definition: "you were **bullied** if *repeatedly* shoved, hit, threatened, called mean names, teased in a way you didn't like, or had other unpleasant things done to you. It is **not bullying** when two students of about the same strength quarrel or fight [emphasis in original]."

Past research has conceptualized and provided evidence for peer victimization as a multidimensional (e.g., Felix, Furlong, & Austin, 2009; Tharp-Taylor et al., 2009) and unidimensional construct (e.g., Wormington et al., 2012). In another study using the same middle school sample as the current study, we provided evidence for one factor to best describe the victimization items using exploratory factor analysis (Wormington et al., 2012). To replicate these findings, we ran an exploratory factor analysis on the victimization items separately by gender, as well as age (i.e., middle school and high school samples). Results once again suggested that victimization items loaded onto a single dimension: all items loaded greater than .40, and the second factor had an eigenvalue less than one. Thus, we treated peer victimization as a single dimension in the current study. The final unitary scale displayed excellent internal reliability, with alphas of .92 and .97 in the middle and high school samples, respectively.

### SCHOOL BELONGING

To assess school belonging, participants responded to five items from the Add Health School Connectedness scale included in the CHKS Middle School

2009 Version (West Ed, 2009). Questions concerned how close participants felt to the school community (i.e., I feel close to people at this school; I am happy to be at this school; I feel like I am part of this school; the teachers at this school treat students fairly; I feel safe at this school). Participants answered all questions on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*).

Until recently, few studies have examined the psychometric properties of the school connectedness scale. However, recent work by Furlong, O'Brennan, and You (2011) sought to test the reliability, concurrent validity, and unidimensionality of the scale within a large, ethnically diverse sample. Results suggest that the Add Health School Connectedness scale is reliable and valid, and represents a unidimensional construct. Findings from our sample support this conclusion: Cronbach's alphas of .87 and .92 were obtained for the middle and high school samples in our study, respectively. In addition, we ran an exploratory factor analysis to determine whether a one-factor structure best fit the data. One factor emerged for both samples, with all items loading greater than .40 and the second factor displaying an eigenvalue less than 1.

#### ACADEMIC VARIABLES

For a measure of academic performance, students self-reported their grade point average on an 8-point scale (1 = *mostly As*, 8 = *mostly Fs*), with lower values representing better academic performance ( $M_{\text{middle school}} = 2.03$ ,  $SD = 1.38$ ;  $M_{\text{high school}} = 2.24$ ,  $SD = 1.45$ ). Self-reported GPA has been found to highly correlate with actual grades and has been used recently in a number of studies (e.g., Trautwein et al., 2012). For structural equation modeling, academic performance was reverse coded so that high values would represent more adaptive outcomes. For school truancy, students indicated the number of times they had missed school in the past 12 months on a 6-point scale (1 = *0 times*, 6 = *more than once a week*;  $M_{\text{middle school}} = 0.30$ ,  $SD = 0.74$ ;  $M_{\text{high school}} = 0.68$ ,  $SD = 1.09$ ).

#### ALCOHOL USE VARIABLES

To assess participants' alcohol use, we drew items from the Monitoring the Future Study survey (Anderson & Brown, 2011; Johnston, O'Malley, Bachman, & Schulenberg, 2010). Specifically, we were interested in adolescents' lifetime alcohol use (defined as any consumption of more than a sip of alcohol over the participants' lifetime) and current alcohol use (defined as instances of consumption over the past 30 days). Using a frequency scale, participants reported the number of days in which they consumed alcohol (*0 days*, *1-2 days*, *3-9 days*, *10-19 days*, *20 or more days*) over their lifetime for lifetime use and over the past 30 days for current use.

## Data Analysis Plan

Structural equation modeling was used in the present study because it allows for multiple dependent variables and partitions out measurement error by creating latent factors of variables (Austin & Calderon, 1996; Byrne, 2012). All analyses were run using MPlus Version 5.0 (Muthén & Muthén, 2010). To assess the source of model misfit, a two-step process of assessing the measurement and structural models was employed (Anderson & Gerbing, 1988). Multiple fit indices were used to assess model fit, including comparative fit index (CFI; Bentler, 1990), Tucker-Lewis index (TLI; Hu & Bentler, 1998), root mean square error of approximation (RMSEA; Marsh, Balla, & McDonald, 1988), and standardized root mean square residual (SRMR; Hu & Bentler, 1998). Latent variables of peer victimization and school belonging were created using indicator variables; physical and relational indicators of peer victimization were used to create a single latent victimization variable, consistent with past research (Topper et al., 2011). All other variables included in the models were manifest (i.e., directly observed) variables. Missing data patterns were examined using MPlus, and values were imputed using full information likelihood method (Muthén & Muthén, 2010). Indirect and direct effects were examined using the MODEL INDIRECT command in MPlus (Muthén & Muthén, 2010).

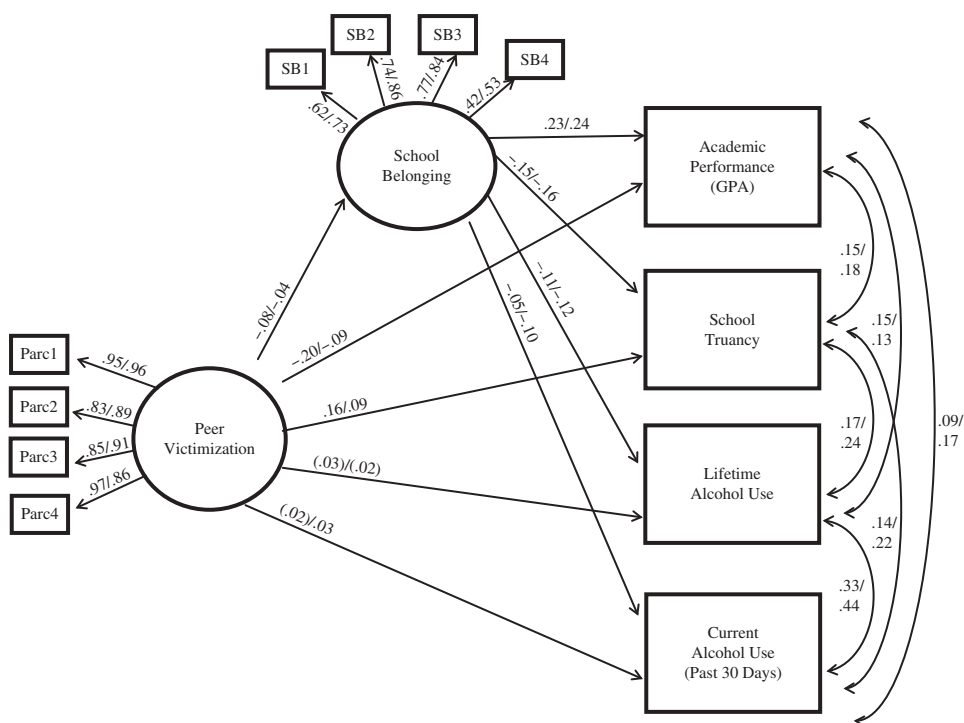
## RESULTS

In the current study, we were interested in investigating the relation of peer victimization to alcohol use and academic outcomes (truancy and performance), both directly and through school belonging. Thus, our structural model included two types of paths. The first type of effect examined ran directly from peer victimization to each outcome of interest (i.e., lifetime alcohol use, current alcohol use, academic GPA, and academic truancy). The second type of effect we examined consisted of indirect pathways from peer victimization to outcomes of interest via school belonging. Because we were also interested in cross-sectional differences in these associations for early and late adolescents, two-group models were run to test for invariance between middle and high school students.

In conjunction with the structural model described above, we also tested a measurement model to ensure acceptable measurement of our latent variables. After running the measurement model, we found that the specified model fit the data well,  $\chi^2(19) = 482.31$ ,  $p < .0001$ ; RMSEA = .055, 90% CI [.051, .060]; CFI = .988; TLI = .982; SRMR = .018. The measurement model fit equally well for the middle and high school samples. After ensuring adequate measurement fit, we then tested our specified structural model with direct associations of peer victimization to student GPA, school truancy,

lifetime alcohol use, and current alcohol use and indirect effects through school belonging. Structural models for the middle and high school samples are displayed in Figure 1. Both structural models fit the data well according to established conventions,  $\chi^2(130) = 809.026$ ,  $p < .0001$ ; RMSEA = .049, 90% CI [.047, .052]; CFI = .980; TLI = .969; SRMR = .018.

In both samples, all dependent variables were significantly correlated with one another ( $r$ s = .09-.44,  $p$ s < .0001). Thus, students who reported less adaptive academic functioning also reported higher alcohol use, consistent with prior research (e.g., Johnston et al., 2006). Of particular interest in the current study, however, was the pattern of association between peer victimization, school belonging, and academic and alcohol use outcomes. In terms of direct associations between peer victimization and outcome variables, no differences were found for middle and high school samples when a two-group model was run; that is, peer victimization was significantly associated with negative academic outcomes (i.e., lower academic performance and school truancy) for both the middle and high school samples, but not



**FIGURE 1** Structural model for middle and high school samples.

*Note.* Coefficients before slash represent middle school sample; coefficients after slash represent high school sample. Nonsignificant coefficients are presented in parentheses. SB = school belonging. Victimization items were parceled before creating a latent peer victimization factor. Error was modeled but not included in the figure for ease of presentation.

with alcohol use variables. A single example was a weak positive association of peer victimization with current alcohol use in the high school sample. With respect to indirect effects of peer victimization through school belonging, all total indirect effects were modest but significant ( $\Upsilon$ s = .02-.09,  $ps < .05$ ). This suggests that school belonging is partially mediating the association between peer victimization and academic and alcohol-related outcomes (Table 1).

## DISCUSSION

Peer victimization is a central concern in school settings, particularly in light of its connection to negative outcomes (Hughes, Middleton, & Marshall, 2009). In the current study, we were interested in investigating the extent to which victimization from peers would impact adolescents' outcomes within (i.e., academic performance, truancy) and beyond (i.e., alcohol initiation and use) the educational domain. In addition, we sought to explore both direct impacts of peer victimization on academic and alcohol-related outcomes and indirect effects through school belonging. All together, this research helps expand our understanding of peer victimization in several ways, including (a) simultaneously considering academic and nonacademic outcomes important during adolescence, (b) testing for a school-based mechanism of influence, and (c) examining cross-sectional differences in associations during early and late adolescence.

### Peer Victimization: Implications Beyond the School Day?

Our primary objective was to test whether school-based peer victimization was indeed related to academic (i.e., GPA, truancy) and alcohol-related outcomes (i.e., lifetime alcohol use, current alcohol use). It was expected that higher rates of victimization would generally be associated with poorer adolescent adjustment, given mounting research of its effects across a variety of outcomes (Card & Hodges, 2008). Findings from our study confirmed apprehensions about the negative impact of peer victimization at school with respect to academic outcomes: peer victimization displayed a negative association with academic performance and a positive association with truancy rates. Significant associations highlight the interplay between social and academic factors within educational settings, suggesting that one cannot be fully understood without the other (Anderman, 2002; Goodenow, 1993; Roeser et al., 1996).

A number of recent studies have also suggested an effect of peer victimization beyond the school environment, particularly with respect to alcohol use (Topper & Conrod, 2011). Thus, we tested to see whether a significant direct effect from peer victimization to alcohol initiation and current

**TABLE 1** Direct and Indirect Effects from Peer Victimization to Academic and Alcohol-Related Outcomes for Middle and High School Samples

Outcome	Middle school sample		High school sample	
	Direct effect: Victimization → Outcome ( <i>SD</i> )	Indirect effect: Victimization → School Belonging → Outcome ( <i>SD</i> )	Direct effect: Victimization → Outcome ( <i>SD</i> )	Indirect effect: Victimization → School Belonging → Outcome ( <i>SD</i> )
Academic performance (GPA)	.202 (.055)***	.024 (.009)***	.095 (.033)**	.014 (.001)*
School truancy	.163 (.061)*	.011 (.003)**	.094 (.033)**	.010 (.004)*
Lifetime alcohol use	.033 (.019)	.013 (.005)**	.021 (.008)	.032 (.007)*
Current alcohol use (past 30 days)	.022 (.021)	.004 (.003)	.033 (.013)*	.021 (.006)*

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



use would be found. In contrast to our expectations, school-based peer victimization did not show consistent associations with reported alcohol use. These findings stand in contrast to recent studies and are inconsistent with social control theory, which would hypothesize a positive relation between peer victimization and alcohol use as a failure to bond (Hirschi, 1969).

There are several potential explanations for the surprising findings that emerged in this study. Perhaps, as past studies have suggested, the effect of peer victimization on alcohol and other substance use varies as a function of individual student characteristics (e.g., gender; Wormington et al., 2012). It is also possible that peer victimization is domain specific, such that peer victimization outside of the school context might impact alcohol use, but peer victimization that takes place during the school day does not. Future studies would benefit from testing this assertion by querying students about their experiences with peer victimization inside and outside of school. Similarly, resorting to alcohol use may only be apparent for students who are consistently teased or bullied rather than those who only occasionally experience victimization at the hands of school peers. Since we did not distinguish between types of victimization in the current study, we are unable to speak directly to this possibility. However, future work may be able to test this assertion. As it stands, however, our findings suggest the possibility of domain-specific effects of peer victimization for adolescents, at least for the outcomes measured here. Regardless, our findings help to define the boundaries of the impact of peer victimization, an important empirical question.

### School Belonging: An Important Explanatory Mechanism

Another possibility is that peer victimization might have indirect, but not direct, effects on outcomes. To test this possibility, we examined both direct associations from peer victimization to outcomes and indirect pathways through school belonging. Direct associations from peer victimization to academic outcomes were quite strong, suggesting that students experiencing victimization may be less engaged in school and, subsequently, perform more poorly and not attend as frequently. However, significant indirect associations through school belonging were also found; this highlights feelings of school belonging as a factor that should not be ignored when trying to bolster students' academic functioning.

For alcohol use, only indirect pathways through school belonging were significant, suggesting that peer victimization might only be affecting students' decisions to drink through its impact on perceptions of the school belonging. This finding fits with the limited evidence examining other psychosocial factors (e.g., depressive symptoms, coping-related drinking motives; Luk et al., 2010; Topper et al., 2011) as mediating factors.

## IMPLICATIONS FOR INTERVENTION EFFORTS

Even if school belonging partially explains the relation of peer victimization to key academic and alcohol-related outcomes, why should peer victimization researchers be concerned with school belonging? Apart from providing useful knowledge on which to construct theories of victimization, work dedicated to identifying explanatory mechanisms in the association of victimization to key outcomes have a practical purpose: identifying additional targets for school-based interventions geared at decreasing victimization rates. Intervention-based evidence suggests that students' perceptions of belonging to the school community can be altered (Oelsner et al., 2011). Many implemented interventions, both to decrease alcohol use and to bolster students' academic performance, take place in the school context. Often, these interventions are large-scale and involve changes at every level of school infrastructure (Harris, McFarland, Siebold, & Sarmiento, 2007; Maehr & Midgley, 1996). If school belonging were found to be associated with both important academic and substance use variables, it may be a promising variable to study and attempt to manipulate in future research. In fact, intervention efforts might choose to target school belonging specifically rather than adopting a more global intervention approach as a more cost-effective intervention effort, a point raised by the Centers for Disease Control in their 2009 report on fostering school belonging to improve student health and academic outcomes.

School belonging might also be used as a key factor to enhance the effectiveness of established intervention efforts, such as the Olweus Bullying Prevention Program (Olweus, Limber, & Mahalic, 1999). According to one researcher, individuals might be reluctant to report acts of bullying when they do not feel like a part of the school community (Hong, 2008). An increased feeling of school belonging could, ostensibly, increase the likelihood of reporting violent acts and, in turn, the efficacy of an established intervention effort. Thus, these findings and those from other studies building off of it have important implications in efforts to decrease the potency of peer victimization.

## Developmental Differences

Finally, we considered peer victimization's potential influence on outcomes within a developmental perspective. As described in the results section, two-group models revealed no variance as a function of sample age. The lack of evidence for a developmental difference in the associations of peer victimization with academic and alcohol-related outcomes supports Lerner and colleagues' (1996) assertion that there is substantial continuity that must be considered in the transition to and growth across adolescence. The similarities in the relations between variables of interest across the two school groups has noteworthy implications for theory and practice: not only do

these findings provide evidence that peer victimization has negative consequences beyond middle school—the peak of its effect—but they also suggest that school belonging is a promising target for potential intervention efforts at both ages. This message is consistent with that touted by Resnick and colleagues (1997), as well as the Centers for Disease Control (2009). Thus, intervention efforts may be developed similarly for early and late adolescent targets.

### Limitations and Future Directions

The current study provided a preliminary look at peer victimization in adolescence, suggesting several avenues for future research. However, the use of self-reported data at a single time point limits conclusions that can be drawn specifically from the two data sets presented. As a result, these data implicate but do not definitively identify school belonging as a potential mediator in the association between peer victimization and adolescent functioning in middle and high school. It might be that school belonging impacts peer victimization or that they share a bidirectional relationship. Longitudinal data are needed to isolate within-group effects and address issues of causality.

Future studies employing a longitudinal design and collecting objective measures of the variables examined in the present study will help to elucidate the maladaptive outcomes associated with peer victimization. Similarly, future work could benefit from further identifying mechanisms of influence in the association between the constructs studied above. For example, it is feasible that an increase in adolescents' alcohol use may be a means of coping or an effort to fit in to the school community, both a potential consequence of low feelings of school belonging (Cooper, 1994). Regardless of limitations and necessary future directions, findings from two large, fairly diverse samples of middle and high school students suggest that relations may exist between peer victimization and academic outcomes as well as alcohol involvement that implicates school belonging as a potential mediating variable. These findings have important implications for peer victimization researchers, interventionists, and school administrators.

### COMPETING INTERESTS

None.

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