

# School Functioning in Early Adolescence: Gender-Linked Responses to Peer Victimization

Wendy L. G. Hoglund  
University of Victoria

Research indicates that peer victimization contributes to poor school functioning in childhood and adolescence, yet the processes by which victimization interferes with school functioning are unclear. This study examined internalizing and externalizing problems as domain-specific mediators of the association between subtypes of peer victimization (relational, physical) and school functioning (engagement, achievement) with a cross-sectional sample of 337 early adolescents. School engagement was examined further as a proximal process that intervenes in the associations between internalizing and externalizing problems and achievement. Gender differences in these associations were assessed. As expected, internalizing problems showed stronger links with relational than with physical victimization and partially mediated the influence of both on engagement for girls but not boys. Externalizing problems partially mediated the influence of both subtypes of victimization on school functioning for girls and physical victimization for boys. Notably, engagement was a robust mediator of the contributions of internalizing problems and physical victimization to achievement for girls and externalizing problems to achievement for girls and boys. Findings also suggest that physical (but not relational) victimization partially mediates the link between internalizing and externalizing problems and school functioning.

*Keywords:* school functioning, peer victimization, internalizing and externalizing problems, gender differences, early adolescence

School-based studies report that approximately 10% of children and adolescents are persistently victimized by peers, most often in the context of their daily school routine (Olweus, 1991). Not surprisingly, research with kindergarten through middle-school students indicates that peer victimization interferes with concurrent and prospective school functioning, including engagement in learning activities, attitudes toward school and teachers, and achievement (Buhs, 2005; Buhs, Ladd, & Herald, 2006; Kochenderfer & Ladd, 1996; Nansel, Haynie, & Simons-Morton, 2003). In contrast, some research with elementary school students reports few associations between problematic peer relationships, including victimization and rejection, and achievement (Hanish & Guerra, 2002; Wentzel & Asher, 1995). The heterogeneity in these findings may reflect several processes that are not well understood, including underlying maladjustment processes (e.g., internalizing and externalizing problems) by which victimization creates risks

for school problems (Wentzel, 1999), domain specificity in the processes by which subtypes of victimization (e.g., relational, physical) contribute to poor school functioning for girls and boys (Rose & Rudolph, 2006), and more proximal school engagement processes that influence achievement (Skinner, Wellborn, & Connell, 1990). The current study examines these phenomena as explanations for the association between peer victimization and school functioning in early adolescence. Specifically, internalizing and externalizing problems are tested as domain-specific mediators of the influence of relational and physical victimization on school functioning. School engagement is tested further as a key proximal process linking internalizing and externalizing problems with achievement. Gender differences in these associations are examined (see Figure 1).

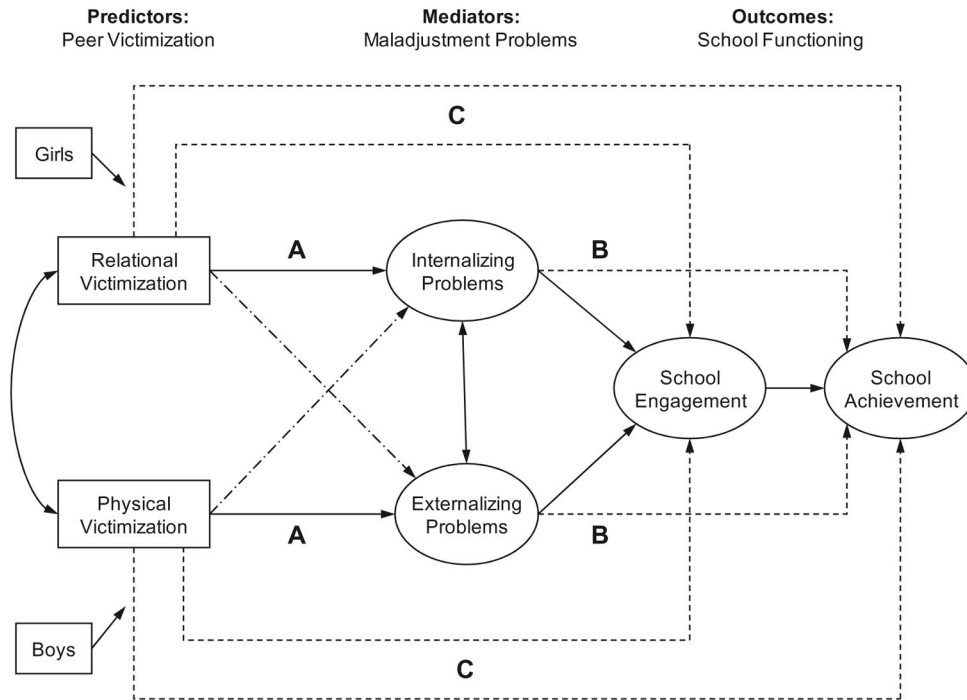
Individual differences in how adolescents experience and deal with episodes of relational and physical victimization likely play a significant role in the heterogeneous findings linking victimization with school functioning. Indeed, internalizing problems have been shown to mediate the relation between victimization, assessed globally, and achievement in middle school (Juvonen, Nishina, & Graham, 2000; Nishina, Juvonen, & Witkow, 2005; Schwartz, Gorman, Nakamoto, & Toblin, 2005). The story is likely more complex than this, given that subtypes of victimization have been established (Crick & Bigbee, 1998) and given the potential differential costs of subtypes of victimization for internalizing and externalizing problems (Hoglund & Leadbeater, 2007; Prinstein, Boergers, & Vernberg, 2001; Storch, Nock, Masia-Warner, & Barlas, 2003), the role of school engagement in achievement outcomes (Connell, Spencer, & Aber, 1994; Furrer & Skinner, 2003; Roeser, Eccles, & Freedman-Doan, 1999), and gender-

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Wendy L. G. Hoglund, Department of Psychology, University of Victoria, Victoria, British Columbia, Canada.

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Correspondence concerning this article should be addressed to Wendy L. G. Hoglund, who is now at the Department of Applied Psychology, New York University, East Building, 5th Floor, 239 Greene Street, New York, NY 10003. E-mail: whoglund@nyu.edu



*Figure 1.* Hypothesized mediating role of maladjustment problems on the relation between peer victimization and school functioning and the proximal role of school engagement by gender. Dashed lines indicate direct paths hypothesized to be mediated. Solid lines indicate hypothesized mediation paths and correlations. Dashed-and-dotted lines indicate paths hypothesized to be less robust because of domain specificity in the associations between subtypes of victimization and maladjustment. A = predictor to mediator path; B = mediator to outcome path; C = predictor to outcome path.

linked vulnerabilities in these associations (Paquette & Underwood, 1999; Paul & Cillessen, 2003; Prinstein et al., 2001).

In sum, it is proposed that (a) internalizing and externalizing problems mediate the concurrent associations between subtypes of victimization and school functioning, with internalizing problems predominantly mediating the cost of relational victimization on school functioning and externalizing problems most robustly mediating the influence of physical victimization; (b) school engagement is a key proximal process that further intervenes in the relation between internalizing and externalizing problems and achievement; and (c) gender moderates these associations, with girls showing greater risks for the path from relational victimization to school functioning via internalizing problems and boys showing greater vulnerability to the path from physical victimization to school functioning via externalizing problems. Given the potential transactional links between victimization and maladjustment (Nishina et al., 2005; Rudolph & Hammen, 1999), a competing hypothesis that victimization intervenes in the relation between internalizing and externalizing problems and poor school functioning is also tested. Research in support of these hypotheses is reviewed next.

#### Risk-to-Maladjustment Hypothesis: The Mediating Role of Maladjustment Processes

The hypothesis that subtypes of victimization contribute most distinctively (beyond their shared variance) to domain-specific

maladjustment processes and, in turn, poor school functioning is broadly consistent with related domains of inquiry. Early research from Crick and colleagues argued convincingly for examination of both the unique and the overlapping contributions of relational and physical victimization to maladjustment (Crick & Bigbee, 1998; Crick & Grotpeter, 1996). These studies implicated relational victimization as a particularly salient stressor for internalized distress, but they overlooked the unique influence of physical victimization on internalizing problems and of both forms of victimization on externalizing problems. Recent cross-sectional and longitudinal research with middle-school students further informs the current hypothesis that relational victimization contributes most distinctly to internalizing problems whereas physical victimization relates most robustly to externalizing problems (Hoglund & Leadbeater, 2007; Prinstein et al., 2001; Storch et al., 2003).

#### *The Role of Internalizing Problems*

Drawing from theory on the transactional relations between interpersonal stressors and internalizing problems (Leadbeater, Blatt, & Quinlan, 1995; Rudolph & Hammen, 1999), it is proposed that relational victimization contributes most prominently to depressed affect, anxiety, and stress, which in turn challenge adolescents' ability to do well in school. Relational victimization is believed to influence internalizing problems in particular because such victimization threatens beliefs of peers as supportive and trustworthy through the manipulation of social status and friend-

ships, contributing to adolescents' hypervigilance with preserving their peer relationships (Hoglund & Leadbeater, 2007; Rudolph & Clark, 2001). Such threats are considered to be especially troublesome for girls because of their heightened orientation toward relational concerns (Leadbeater et al., 1995; Rose & Rudolph, 2006). Adolescents who focus excessively on this internalized distress in school may be overly distracted from academic pursuits and disengage from learning activities, interfering with their achievement (Duchesne, Larose, Guay, Vitaro, & Tremblay, 2005; Roeser et al., 1999).

Early conceptualizations of the relation between problematic peer relationships and poor school functioning come from Wentzel (1999), who hypothesized that such relations operate indirectly via maladjustment processes. As a follow-up to this, Juvonen and colleagues (Juvonen et al., 2000; Nishina et al., 2005) demonstrated that internalizing problems mediated the relation between peer victimization, assessed globally, and achievement over a school year in early adolescence. Similarly, Schwartz et al. (2005) found that depressive symptoms mediated the concurrent and 1-year prospective associations between a latent construct of victimization and achievement in fourth and fifth grades. Although these studies interpreted the costs of internalizing problems as undermining achievement via school engagement, engagement was not assessed. Nishina et al. (2005) also tested two competing hypotheses regarding the direction of the links from victimization and internalizing problems to achievement with a large sample of sixth-grade students. Findings supported a bidirectional model in which internalizing problems mediated the effect of victimization on achievement and, reciprocally, victimization mediated the link between internalizing problems and achievement. In contrast, findings from Schwartz et al. supported a unidirectional link from victimization to depression to achievement. Thus, it is unclear whether internalizing problems mediate the link between victimization and school functioning, in support of a risk-to-maladjustment model, or whether victimization links internalizing problems with school functioning, in support of a maladjustment-to-risk model (see Ladd, 2006).

### *The Role of Externalizing Problems*

Building from theory on the transactional associations between challenging social environments and externalizing problems (Cicchetti & Rogosch, 2002; Crick & Zahn-Waxler, 2003), it is proposed that physical victimization contributes most notably to aggressive, hyperactive, and disruptive behaviors. Such victimization is thought to jeopardize adolescents' feelings of safety and power in the peer group through physical assaults and threats of harm, contributing to adolescents' preoccupation with self-protection, social dominance, and retaliation (Crick & Dodge, 1996; Hoglund & Leadbeater, 2007; Lochman & Dodge, 1998). Boys are believed to be particularly vulnerable to such physical threats because of their well-defined social hierarchies and tendency toward social dominance (Maccoby, 2004; Rose & Rudolph, 2006). Adolescents who are absorbed with feelings of anger and agitation and desires for retribution may be disinterested in school and unwilling to exert the effort necessary to do well academically (Duchesne et al., 2005).

Although externalizing problems as a mediator of the association between problematic peer relationships and school function-

ing has been proposed theoretically (Wentzel, 1999), this model has received less empirical attention than internalizing problems. Research with middle-school students has demonstrated concurrent and 1-year prospective associations between global assessments of peer victimization and externalizing problems (Lopez & Dubois, 2005; Paul & Cillessen, 2003; Troop-Gordon & Ladd, 2005), between peer victimization and rejection and poor school functioning (Gest, Welsh, & Domitrovich, 2005; Nansel et al., 2003; Wentzel, 2003), and between externalizing problems and poor school functioning (Duchesne et al., 2005; Gest et al., 2005; Wentzel & Caldwell, 1997). For instance, in a 1-year longitudinal study with sixth-grade students, victimized adolescents showed significantly poorer engagement and achievement than nonvictimized adolescents, and these differences persisted over time (Nansel et al., 2003). A 6-month longitudinal study of third- to fifth-grade students also found that peer rejection and externalizing problems both contributed to declines in self-reported school liking over the course of the school year (Gest et al., 2005). Still, the mediating role of externalizing problems on the relation between subtypes of victimization and school functioning is uncertain. Moreover, whether the contributions of victimization and externalizing problems to school functioning support a risk-to-maladjustment or a maladjustment-to-risk model is unclear (Ladd, 2006).

The evidence highlighted above has sharpened understanding of the role problematic peer relationships and maladjustment can play in limiting school functioning. However, indirect links from subtypes of victimization to school functioning via both internalizing and externalizing problems have been overlooked. Moreover, although it has been hypothesized, it is unclear whether both forms of maladjustment relate indirectly to achievement via the proximal process of engagement.

### *Proximal Process Hypothesis: The Mediating Role of School Engagement*

School engagement is a multidimensional construct that encompasses behavioral, emotional, and cognitive components (Fredricks, Blumenfeld, & Paris, 2004). Behavioral engagement refers to participation in learning activities in the classroom, including effort, attentiveness, self-directed participation, and school attendance or absences. Emotional engagement refers to affective attitudes in the classroom, including interest, enjoyment, anxiety, and feelings of connectedness to classmates, teachers, and school in general. Cognitive engagement is defined as a strategic investment in learning, including mental effort directed toward learning, cognitive flexibility, self-regulated motivation to learn and master concepts, and the use of key learning strategies. Together, these central components provide a theoretically and empirically rich characterization of school engagement that may be particularly informative for practice directed at improving achievement outcomes.

Drawing from theory on school engagement as a key construct linking peer relationships and school achievement (Skinner et al., 1990; Wentzel, 1999), it is proposed that experiences of peer victimization at school contribute to maladjustment, which in turn challenges adolescents' ability or motivation to enjoy school and commit to learning. In turn, behavioral, emotional, and cognitive disengagement from school and learning are expected to interfere with adolescents' ability to do well academically. Depressed,

anxious, or socially stressed adolescents are thought to disengage from the learning process and to be unlikely to expend the effort necessary for high achievement because they feel disconnected from classmates and teachers, concentrate excessively on their peer relationships at the expense of their learning, and hold pessimistic views of their academic abilities (Rudolph & Hammen, 1999; Wentzel, 1999). This path to poor achievement is hypothesized to be particularly descriptive of girls, given their greater risk for internalizing problems in early adolescence (Leadbeater et al., 1995). Alternatively, aggressive, hyperactive adolescents are believed to disengage from learning activities and be unmotivated to invest the behavioral and cognitive effort necessary for high achievement because they dislike school in general, have trouble concentrating on learning activities, and are easily distracted or bored (Wentzel, 1999). This path to achievement is proposed to characterize boys in particular, given their greater risk for externalizing problems (Crick & Zahn-Waxler, 2003).

In support of theory of school engagement as a key mechanism by which victimization and maladjustment interfere with achievement, Furrer and Skinner (2003) reported that self-perceived connectedness to peers (acceptance) contributed to greater engagement over 1 year among third- to sixth-grade students. In turn, engagement mediated the effect of connectedness to peers on school achievement. Furrer and Skinner reasoned that positive peer experiences contribute to feelings of belonging in the classroom and to internal working models of peer relationships as supportive. Such positive peer relationships are thought to limit negative emotions, boost participation in school activities, and promote greater opportunities for learning and success. Longitudinal research from Wentzel (2003) provides additional support for this hypothesis: Learning effort mediated the effect of controversial peer status (adolescents who are rejected by some peers but accepted by others) in sixth grade on achievement in eighth grade.

Together, the research identified in the sections above provides compelling evidence in support of the hypotheses that internalizing and externalizing problems are important processes connecting peer victimization with poor school functioning and for the direct link between school engagement and achievement. However, the power of engagement to operate as a central process by which maladjustment contributes to poor achievement in the context of victimization remains understudied. As school engagement is thought to be affected by individual and contextual features and to be a prime target for prevention owing to its potential for change, theoretical and practical reasons reinforce the need to better understand engagement as a central influence on achievement in the context of peer victimization and maladjustment (Fredricks et al., 2004).

### Gender Differences in Associations Among Victimization, Maladjustment, and School Functioning

Some gender-linked vulnerability to subtypes of victimization, internalizing and externalizing problems, and school functioning has been recognized. Although some research reports that girls experience significantly more relational victimization than boys and that boys experience more physical victimization than girls, these reports are inconsistent (see Archer, 2004). Other studies have found that these gender patterns hold only for physical victimization (Crick & Grotpeter, 1996; Paquette & Underwood,

1999; Prinstein et al., 2001; Storch et al., 2003). Gender differences may be most apparent in the costs of subtypes of victimization rather than in mean differences. Indeed, evidence suggests that girls may be overly distressed by relational threats because of a preoccupation with peer evaluation and loss of relationships relative to boys. Alternatively, boys may find physical victimization more hurtful because of a tendency toward social dominance (see Rose & Rudolph, 2006). In a sample of fifth- and sixth-grade students, relational victimization was linked to internalizing problems for girls but not boys, whereas physical victimization was associated with internalizing problems for both girls and boys (Storch et al., 2003). Similarly, Prinstein et al. (2001) reported that relational victimization added to depression among girls but not boys, whereas physical victimization was connected with depression for boys but not girls in 9th and 12th grades. Gender differences in maladjustment may account for some of this gender-linked vulnerability to subtypes of victimization. It is well established that gender differences in internalizing problems emerge in early adolescence, with girls showing greater vulnerability than boys (Leadbeater et al., 1995). Gender differences in externalizing problems are also well recognized, with boys showing higher levels than girls, but levels begin to converge in early adolescence (Crick & Zahn-Waxler, 2003).

Alternatively, experiences of socially unexpected or gender nonnormative victimization (i.e., relational threats for boys and physical victimization for girls) are also associated with substantial distress in related domains of maladjustment (Crick, 1997; Crick & Bigbee, 1998; Dhami, Hoglund, Leadbeater, & Boone, 2005; Hoglund & Leadbeater, 2007; Paquette & Underwood, 1999). For instance, Crick and Bigbee (1998) reported that relational victimization contributed uniquely to internalizing problems among boys but not girls in fourth and fifth grades. Similarly, in a study of early adolescents, middle-school boys who reported higher levels of relational victimization showed higher levels of teacher-reported social withdrawal relative to girls (Hoglund & Leadbeater, 2007). Other research found that both relational and physical victimization contributed to aggression among girls but not boys in seventh and eighth grades (Paquette & Underwood, 1999). These studies call attention to the need to better understand how socially unexpected victimization influences risks for maladjustment and poor school functioning.

Gender differences in engagement and achievement have been documented in studies with elementary and middle-school students as well. Typically, girls evidence higher levels of school functioning than boys, as indicated by self- and teacher reports (Blumenfeld et al., 2005; Connell et al., 1994; Duchesne et al., 2005; Furrer & Skinner, 2003; Roeser, Eccles, & Sameroff, 1998). Consistent with the evidence outlined above, girls may be especially vulnerable to poor school functioning in response to relational victimization and internalizing problems, whereas boys may be particularly likely to show poor school functioning in response to physical victimization and externalizing problems. Girls' overall greater commitment to learning could also make them more resistant to the school costs of victimization and maladjustment than boys (Roeser et al., 1998).

In sum, the purpose of the current study was (a) to examine internalizing and externalizing problems as domain-specific mediators of the association between subtypes of peer victimization (relational, physical) and school functioning (engagement,



achievement); (b) to examine school engagement as a proximal mediator of the link between internalizing and externalizing problems and achievement; (c) to examine gender-linked vulnerabilities in these mediation paths; and (d) to test a competing hypothesis that victimization mediates the link between maladjustment and school functioning. It was hypothesized that (a) internalizing problems would most prominently mediate the link between relational victimization and school functioning, whereas externalizing problems would most robustly mediate the relation between physical victimization and school functioning, with modest cross-domain mediation paths; (b) school engagement would further intervene in the relation between maladjustment and achievement; (c) gender would moderate these associations such that the path from relational victimization to internalizing problems to school functioning would be more robust for girls than for boys, whereas the path from physical victimization to externalizing problems to school functioning would be stronger for boys than for girls; and (d) victimization would also mediate the link between maladjustment and school functioning in support of a maladjustment-to-risk model, but less robustly than the risk-to-maladjustment model (Ladd, 2006; Schwartz et al., 2005).

## Method

### Participants

Participants were 337 early adolescents in Grades 6 and 7 at a suburban middle school in British Columbia, Canada (52.5% Grade 6; 57.3% girls; mean age = 12.5 years, range = 11.5 to 13.9 years). Students' racial/ethnic status was 80% European Canadian ( $n = 269$ ) and 20% visible minority (Aboriginal, East and Southeast Asian;  $n = 68$ ). Seventy-six percent of students lived in a two-parent household. Seventeen percent of parents had a high school diploma or less, 46.6% had some college or technical training, and 36% had a bachelor degree or higher. According to Statistics Canada (2002) *2001 Community Profiles*, the average annual income of families in the school district (\$33,859) was slightly higher than British Columbia's average annual family income (\$31,544).

### Procedure

Information packages including a statement on the purpose of the study, parental consent forms, and a short demographics questionnaire were sent home with all students in Grades 6 and 7. Students received a snack item as an incentive to return their consent forms, regardless of whether parents granted consent. Homeroom classes also received \$1 for each consent form returned, to be used for a class activity. Sixty-eight percent of eligible students returned consent forms (364 of 537 students). Written consent was received from 62.9% of parents ( $N = 339$ ); in 6.8% ( $n = 25$ ) of cases, parents refused consent or students refused assent. The final sample included 62.5% of eligible students ( $N = 337$ ; 1 student left on vacation before data collection and data for 1 student were dropped when a breach of confidentiality occurred).

Data were collected in June 2004 from Grade 6 and 7 students and their homeroom teachers during class time, about 40 min per class. Students completed questionnaires assessing peer victimization, depression, anxiety, social stress, and school engagement in

class groups of 12 to 27 students. One research assistant read the questions aloud, and two others circulated to answer questions and ensure that students completed the questionnaires correctly. Students who were absent during data collection completed the questionnaires with a research assistant when they returned to school. Nonparticipants read or worked on a class activity at their desks quietly. For each student with consent to participate, homeroom teachers ( $N = 19$ ) completed questionnaires rating students' aggression and hyperactivity. Data on achievement, attitude and effort, and absences were gathered from students' report cards.

### Measures

*School achievement* was assessed from teacher-reported final grades in the five core subjects (English or French, math, science, language arts, and social studies) on students' report cards. Teacher ratings were converted to a 7-point scale (0 = *F*, 1 = *incomplete*, 2 = *C-*, 3 = *C*, 4 = *C+*, 5 = *B*, and 6 = *A*). Grades were highly consistent between subjects ( $r_s = .67-.81$ ). Different teachers rated students' grades (and attitude and effort, described below) across the majority of subjects. These teachers were also mostly independent from the homeroom teachers, who rated students' externalizing problems, strengthening confidence that the findings reported between achievement and externalizing problems are not primarily a function of reporter bias.

*School engagement* was assessed from (a) teacher-reported attitude and effort on students' final report cards in the five core subjects (English or French, math, science, language arts, and social studies), (b) school records of students' total number of absences during the school year, and (c) self-reported behavioral and emotional engagement on the School Engagement Questionnaire (Furrer & Skinner, 2003). Teacher ratings of attitude and effort are thought to tap students' cognitive engagement (investment in learning, self-regulated motivation, thoughtfulness) and behavioral engagement (involvement in learning, self-directed participation, persistence on academic tasks). Teacher ratings were converted to a 3-point scale (0 = *below average*, 1 = *average*, 2 = *above average*) and were averaged within each subject across the three report card terms of the school year and then across subjects. Attitude and effort were highly related across subjects ( $r_s = .57-.75$ ). School records of absences have been shown to index negative behavioral engagement or disengagement from school (Fredricks et al., 2004). Absences were highly positively skewed (range = 1 to 66), and values were log transformed. Attitude and effort and absences were moderately correlated ( $r = -.34$ ).

The self-reported Behavioral Engagement subscale of the School Engagement Questionnaire taps students' involvement in learning, including participation in class activities, concentration, and persistence (e.g., "listen carefully in class," "get involved in class," "try hard to do well"). The Emotional Engagement subscale indexes students' affective reactions in class, including interest, enjoyment of class and learning, and sense of belongingness (e.g., "class is fun," "feel interested in class," "enjoy learning new things"). These subscales contain five positive items each, rated on a 4-point scale (0 = *not at all true* to 3 = *very true*). (The five negative items from each subscale were not assessed.) Behavioral and emotional engagement correlated highly with each other ( $r_s = .74$ ) and moderately with attitude and effort ( $r_s = .53$  and  $.40$ , respectively) and absences ( $r_s = -.25$  and  $-.21$ , respectively).

*Internalizing problems* were assessed from self-reported depression and anxiety on the Youth Self-Report (YSR; Achenbach, 1991) and social stress on the Behavioral Assessment System for Children (BASC; Reynolds & Kamphaus, 1998). The YSR Depression and Anxiety subscale indexes oversensitivity, worries, sadness, and feelings of hopelessness. The YSR suicide item was not asked at the school's request. The BASC Social Stress subscale assesses stress and loneliness in interpersonal relationships. The YSR and BASC subscales contain 13 items each, rated on a 3-point scale (0 = *not true* to 2 = *very or often true*; the BASC true-false scale was altered to be consistent with the YSR). Depression and stress were highly correlated ( $r = .81$ ).

*Externalizing problems* were assessed from teacher-reported aggression and hyperactivity on the BASC (Reynolds & Kamphaus, 1998). The Aggression subscale assesses physical hostility and destructive, defiant behaviors. The Hyperactivity subscale indexes poor concentration and disruptive, overactive behaviors. The 14 aggression items and 13 hyperactivity items are rated on a 4-point scale (0 = *never* to 3 = *almost always*). Aggression and hyperactivity were highly correlated ( $r = .84$ ).

*Peer victimization* was measured from self-reported episodes of relational and physical victimization on the Social Experiences Questionnaire (Crick & Grotpeter, 1996). The Relational subscale taps experiences of social exclusion and friendship restriction (e.g., "other kids leave you out on purpose," "other kids say they won't like you unless you do what they want you to do," "other kids keep other students from liking you"). Physical victimization assesses incidents of physical harm and threats of harm (e.g., "get hit by another student," "other kids kick you or pull your hair," "other kids say they will beat you up"). These subscales contain five items each, rated on a 5-point scale (0 = *never* to 4 = *all the time*). The moderate correlation between these subscales ( $r = .58$ ) indicates that about 33% of the variance between these constructs is shared.

All scale scores were computed as the mean across the items for each construct. Basic psychometrics and mean-level gender differences for each construct are presented in Table 1.

## Results

Findings are presented in four sections. First, descriptive statistics of the indicators and partial correlations among the latent constructs are presented by gender. Second, preliminary models are examined to establish the initial criterion for mediation. Third, the risk-to-maladjustment hypothesis, that victimization contributes to maladjustment, which in turn interferes with school functioning, is examined, including the proximal process hypothesis, that engagement intervenes in the association between maladjustment and achievement. Last, the alternative maladjustment-to-risk theory, that victimization mediates the link between maladjustment and school functioning, is tested, including the proximal process model of engagement as a mediator of the association between victimization and achievement. Gender differences in each of these models are examined.<sup>1</sup>

### Descriptive Statistics

As shown in Table 1, girls showed significantly ( $p < .01$ ) higher mean levels of school achievement (except in math and

science) and engagement (except absences) and reported modestly ( $p = .06$ ) more symptoms of depression and anxiety than boys did. In contrast, mean levels of physical victimization, aggression, and hyperactivity were significantly ( $p < .01$ ) higher for boys than for girls. Effect sizes for these differences were small ( $\eta^2 = .01-.10$ ), but all differences were in the expected direction and together describe a general skill set of early adolescent girls and boys that is consistent with a vast body of literature (Leadbeater et al., 1995; Roeser et al., 1998; Rose & Rudolph, 2006). Gender differences in relational victimization and stress were not significant.

As shown in Table 2, partial correlations among the latent constructs were all significant and in the expected directions, with the exception of two nonsignificant correlations for boys. According to Fisher's  $z$ -score tests with Bonferroni adjustments, there were modest but reliable ( $p < .05$ ) gender differences in 4 of the 15 (26.7%) correlations, significantly more than expected by chance. Physical victimization was associated with significantly poorer achievement, whereas engagement was correlated with significantly better achievement, for girls relative to boys. Externalizing problems were correlated with significantly poorer engagement and achievement for boys relative to girls.

### Structural Equation Models Testing the Mediation Hypotheses

The risk-to-maladjustment, proximal process, and maladjustment-to-risk hypotheses are tested using structural equation models with Amos 5.0 (Arbuckle, 2003). Model fit is examined using the chi-square statistic, comparative fit index (CFI), and root-mean-square error of approximation (RMSEA). The CFI compares the specified model with a model in which all variables are assumed to be uncorrelated (i.e., the null model). The RMSEA index incorporates adjustments for model complexity so that the evaluation of fit is not overly influenced by the number of parameters included in the model. CFI values of .90 or greater and RMSEA values of .06 or less are considered indicative of adequate fit (Kline, 2005).

Mediation is evaluated on the basis of three mediation criteria that assess the contributions of the predictor variable to the mediator (Path A) and the outcome (Path C) and of the mediator to the outcome (Path B; see Figure 1). To meet the first mediation criterion, the predictor (e.g., relational victimization) should relate significantly to the mediator (e.g., internalizing problems) and outcome (e.g., engagement), and the mediator should relate significantly to the outcome (Baron & Kenny, 1986). Associations that do not achieve this first criterion are not evaluated further. According to the second mediation criterion, the estimate of the predictor on the outcome (Path C) should decrease in significance

<sup>1</sup> Grade differences were not assessed in the mediation models tested, given the restricted range of developmental period studied (i.e., early adolescence; ages 11–13 years). In addition, only minor differences between Grade 6 and 7 students in maladjustment were expected, predominantly for teacher-rated externalizing problems related to the "aggression bump" often observed after the initial transition into middle school. Consistent with this, Grade 6 students showed significantly higher mean levels of teacher-rated aggression,  $F(1, 335) = 7.05, p < .01$ , and hyperactivity,  $F(1, 335) = 4.15, p < .05$ , but lower mean levels of physical victimization,  $F(1, 335) = 6.96, p < .01$ , and absences,  $F(1, 335) = 8.98, p < .01$ , than Grade 7 students.

Table 1

*Psychometric Properties and Gender Differences in Mean Levels (and Standard Deviations) of Peer Victimization and Indicators of Maladjustment and School Functioning*

Variable	$\alpha$	No. items	Range	Girls ( <i>n</i> = 193)	Boys ( <i>n</i> = 144)	Total ( <i>N</i> = 337)	Univariate <i>F</i> (1, 335)	$\eta$
School achievement (GPA)								
English/French (T)		1	2–6	5.03 (1.16)	4.41 (1.26)	4.76 (1.24)	20.74**	.06
Language arts (T)		1	2–6	5.11 (1.02)	4.61 (1.09)	4.89 (1.08)	17.65**	.05
Math (T)		1	1–6	4.94 (1.16)	4.77 (1.23)	4.87 (1.19)	1.63	.00
Science (T)		1	2–6	4.85 (1.23)	4.61 (1.16)	4.74 (1.21)	3.27 <sup>†</sup>	.01
Social studies (T)		1	2–6	5.01 (1.12)	4.64 (1.15)	4.85 (1.15)	8.27**	.03
School engagement								
Attitude and effort (T)	.91	5	0.42–2	1.72 (0.34)	1.53 (0.41)	1.64 (0.38)	20.55**	.06
Absences (SR)		1	0–1.82	1.01 (0.31)	1.04 (0.33)	1.02 (0.31)	0.55	.00
Behavioral engagement (S)	.85	5	0–3	2.41 (0.51)	2.19 (0.64)	2.32 (0.58)	11.71**	.03
Emotional engagement (S)	.86	5	0–3	2.11 (0.56)	1.87 (0.75)	2.01 (0.66)	11.03**	.03
Peer victimization								
Relational victimization (S)	.86	5	0–4	0.91 (0.79)	0.85 (0.80)	0.88 (0.79)	0.57	.00
Physical victimization (S)	.83	5	0–4	0.74 (0.56)	1.22 (0.87)	0.94 (0.75)	37.37**	.10
Internalizing problems								
Depression and anxiety (S)	.84	13	0–1.85	0.46 (0.34)	0.38 (0.36)	0.43 (0.35)	3.42 <sup>†</sup>	.01
Social stress (S)	.88	13	0–1.92	0.53 (0.40)	0.50 (0.39)	0.52 (0.39)	0.49	.00
Externalizing problems								
Aggression (T)	.95	14	0–2.64	0.33 (0.44)	0.59 (0.64)	0.44 (0.55)	18.71**	.05
Hyperactivity (T)	.95	13	0–3	0.51 (0.57)	0.83 (0.74)	0.65 (0.67)	18.89**	.05

Note. T = teacher report; SR = school records; S = self-report.

<sup>†</sup>  $p < .10$ . \*\*  $p < .01$ .

after the mediator is included in the model (Paths A and B; Baron & Kenny, 1986). The third and final mediation criterion is confirmed by computing the confidence interval (CI) around the product of the unstandardized coefficients from Paths A and B ( $CI \pm SE_{AB}$ ). The standard error for Path AB is computed by taking the square root of the sum of the squared coefficients from Paths A and B, each multiplied by the squared standard error of the other path ( $SE_{AB} = \sqrt{SE_A^2 B^2 + SE_B^2 A^2}$ ). Confidence intervals for Path AB that do not include zero suggest that the indirect path from the predictor to the outcome via the mediator is greater than expected by chance (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002).

Partial correlations and three preliminary structural models assessing the unique associations among the subtypes of victimization, internalizing and externalizing problems, and school engagement and achievement are presented first to confirm the initial

mediation criterion for girls and boys. The second and third mediation criteria are confirmed in the main analyses that follow; three risk-to-maladjustment models are tested first and three alternative maladjustment-to-risk models are examined last. In each model, the residual variances between relational and physical victimization and between internalizing and externalizing problems are allowed to correlate to permit assessment of their unique contributions to school functioning.

Multiple-group analysis is used for all analyses. For the preliminary analyses, the path estimates are allowed to vary by gender. For the main analyses, a series of models is tested to assess gender differences in the strength (e.g., a path holds for both girls and boys but is more robust for girls relative to boys) and structure (e.g., a path holds for girls but not boys) of the path parameters. First, an initial structural model with all path parameters fixed to be equal across girls and boys is tested. Next, this model is retested

Table 2

*Partial Correlations Among Peer Victimization and the Latent Maladjustment and School Functioning Constructs for Girls (Above the Diagonal) and Boys (Below the Diagonal)*

Variable	1	2	3	4	5	6
1. School achievement	—	.91** <sup>a</sup>	-.26**	-.31** <sup>a</sup>	-.23**	-.35** <sup>a</sup>
2. School engagement	.85** <sup>a</sup>	—	-.34**	-.39**	-.33**	-.56** <sup>a</sup>
3. Relational victimization	-.18*	-.27**	—	.64**	.69**	.21**
4. Physical victimization	-.06 <sup>a</sup>	-.29**	.64**	—	.57**	.24**
5. Internalizing problems	-.10	-.22**	.73**	.58**	—	.19*
6. Externalizing problems	-.62** <sup>a</sup>	-.78** <sup>a</sup>	.31**	.25**	.20*	—

Note. Girls: *n* = 193. Boys: *n* = 144.

<sup>a</sup> Correlations differ reliably ( $p < .05$  with Bonferroni adjustments) between girls and boys, according to Fisher's *z* score differences.

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

with all of the path parameters freed to vary by gender. A chi-square difference test determines whether allowing each of the path parameters to vary by gender provides a significantly better fit to the data than constraining the path estimates to be equal across girls and boys. If the two models differ significantly, the source of model variance is identified by freeing each path parameter across girls and boys, separately, and comparing fit of this model with the fit of the initial model. Last, fit of a structural model with the significantly different path coefficient(s) freed to vary by gender and all other path parameters constrained to be equal for girls and boys is compared against the fit of the initial model with all path parameters held constant across gender. For each model tested in the main analyses below, the initial test of gender differences was significant. Thus, only the final models with the path estimates that vary significantly by gender and comparisons of fit with the initial models are presented.

### Preliminary Analyses

*Victimization and maladjustment.* Given that subtypes of victimization and maladjustment are tested as both predictors and mediators, the partial correlations shown in Table 2 are used to establish the unique associations between these variables for girls and boys.

*Victimization and school functioning.* A preliminary model that included path parameters from relational and physical victimization to school engagement and achievement was tested first. For girls, both relational ( $B = -0.10$ ,  $SE = .06$ ,  $\beta = -.18$ ,  $p < .05$ ) and physical ( $B = -0.15$ ,  $SE = .08$ ,  $\beta = -.19$ ,  $p < .05$ ) victimization related significantly to poorer engagement, whereas physical ( $B = -0.47$ ,  $SE = .19$ ,  $\beta = -.24$ ,  $p < .01$ ) but not relational ( $B = -0.14$ ,  $SE = .13$ ,  $\beta = -.10$ ,  $p = .29$ ) victimization contributed to lower achievement. For boys, physical ( $B = -0.20$ ,  $SE = .08$ ,  $\beta = -.28$ ,  $p < .01$ ) but not relational ( $B = 0.02$ ,  $SE = .08$ ,  $\beta = .03$ ,  $p = .79$ ) victimization related significantly to lower engagement, whereas relational ( $B = -0.32$ ,  $SE = .15$ ,  $\beta = -.23$ ,  $p < .05$ ) but not physical ( $B = 0.12$ ,  $SE = .14$ ,  $\beta = .09$ ,  $p = .41$ ) victimization added significantly to poorer achievement.

*Maladjustment and school functioning.* A preliminary model examined the unique influence of internalizing and externalizing problems on engagement and achievement. For girls, both internalizing and externalizing problems contributed significantly to lower engagement ( $B_s = -.44$  and  $-.34$ ,  $SE_s = .12$  and  $.07$ ,  $\beta_s = -.30$  and  $-.34$ ,  $p < .01$ , respectively) and achievement ( $B_s = -.72$  and  $-.90$ ,  $SE_s = .29$  and  $.18$ ,  $\beta_s = -.19$  and  $-.35$ ,  $p < .01$ , respectively). For boys, externalizing problems added significantly to poorer engagement ( $B = -0.59$ ,  $SE = .08$ ,  $\beta = -.60$ ,  $p < .01$ ) and achievement ( $B = -1.14$ ,  $SE = .14$ ,  $\beta = -.65$ ,  $p < .01$ ), but internalizing problems were unrelated to engagement ( $B = -0.18$ ,  $SE = .15$ ,  $\beta = -.09$ ,  $p = .22$ ) and achievement ( $B = 0.17$ ,  $SE = .27$ ,  $\beta = .05$ ,  $p = .52$ ).

*School engagement and achievement.* A preliminary model also showed that engagement related significantly to higher levels of achievement for both girls ( $B = 0.54$ ,  $SE = .14$ ,  $\beta = .24$ ,  $p < .01$ ) and boys ( $B = 0.46$ ,  $SE = .13$ ,  $\beta = .27$ ,  $p < .01$ ).

In sum, all but one association achieved the first mediation criterion for girls: the link between relational victimization and achievement. For boys, all but four of the associations met the initial criterion: the associations between relational victimization

and engagement, between physical victimization and achievement, and between internalizing problems and both engagement and achievement. These findings suggest gender differences in both the strength and structure of these associations, which are examined further in the main analyses below.

### Main Analyses: Risk-to-Maladjustment Hypotheses

The hypotheses that internalizing and externalizing problems intervene in the link between subtypes of victimization and school functioning and that engagement further mediates the relation between maladjustment and achievement were tested first.

*Victimization to maladjustment to school engagement.* Model 1a assessed the hypothesis that internalizing and externalizing problems mediate the contributions of subtypes of victimization to school engagement (see Figure 2). The path estimates from relational victimization and externalizing problems to engagement were reliably ( $p < .05$ ) higher for boys relative to girls. With these two significantly different path estimates freed to vary by gender and all other path coefficients set to be invariant, fit of Model 1a was modest,  $\chi^2(68, N = 337) = 194.22$ ,  $p < .01$  (CFI = .927; RMSEA = .074), and significantly better than the initial model with all path estimates set to be equal across gender,  $\chi^2_{diff}(2) = 9.77$ ,  $p < .01$ . Model 1a accounted for 27.1% of the variance in engagement for girls and considerably more so for boys (40.6%), with a large magnitude of effect (Cohen's  $d > 1.0$ ; Cohen, 1988) on engagement for both girls ( $r_{effect\ size} = .521$ ) and boys ( $r_{effect\ size} = .637$ ). As shown in Figure 2, physical victimization and internalizing and externalizing problems each related significantly to poorer engagement for girls and boys, with a significantly more robust association between externalizing problems and engagement for boys than girls. Relational victimization added unexpectedly to higher levels of engagement for boys. Given that this association did not meet the initial criterion for mediation and is potentially an artifact of a suppressor effect as indicated by the negative correlation shown in Table 2, this path is not interpreted further.

Mediation was supported for Model 1a (see Figure 2). In support of the second mediation criterion (Baron & Kenny, 1986), the association between relational victimization and engagement declined in significance with the inclusion of the mediated paths via internalizing and externalizing problems for girls but not boys, as indicated by a comparison of the path estimates shown in Figure 2 and the preliminary analyses. The estimate of physical victimization on engagement also dropped in significance with the inclusion of maladjustment problems for both girls and boys. Support for the third mediation criterion was established by confirming that the confidence intervals of the indirect path parameters via the mediators did not include zero (MacKinnon et al., 2002). According to this test, internalizing problems partially accounted for the influence of both relational ( $z = -2.44$ ,  $p < .01$ ) and physical ( $z = -1.96$ ,  $p < .05$ ) victimization on engagement for girls, with modestly stronger effects for relational than for physical victimization. Externalizing problems also partially mediated the contribution of relational victimization to engagement for girls ( $z = -1.99$ ,  $p < .05$ ), and physical victimization for both girls ( $z = -1.97$ ,  $p < .05$ ) and boys ( $z = -2.10$ ,  $p < .05$ ), with a modestly more robust estimate for boys. (See Figure 2.)



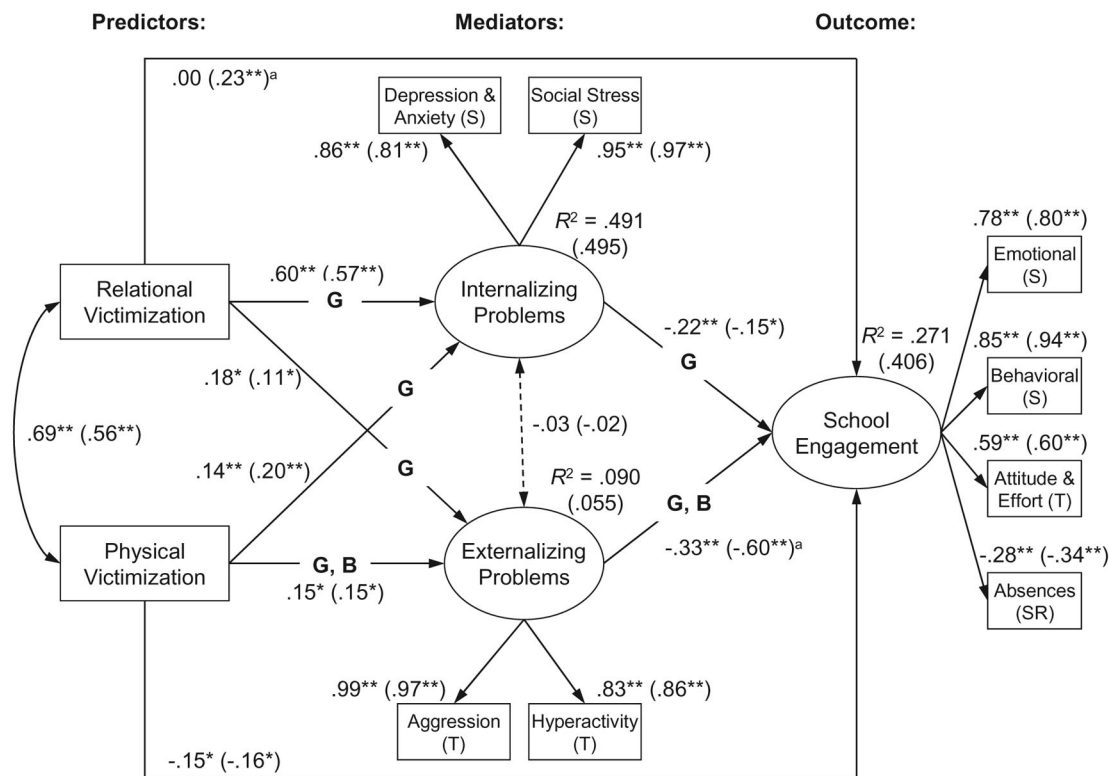


Figure 2. Standardized estimates of the direct and mediated paths from peer victimization to maladjustment to school engagement by gender. Model 1a:  $\chi^2(68, N = 337) = 194.22, p < .01$ ; comparative fit index = .927; root-mean-square error of approximation = .074. Standardized path coefficients shown for girls (and boys in parentheses). Dashed lines indicate nonsignificant paths. All factor loadings were significant ( $p < .01$ ). G = mediated path for girls; B = mediated path for boys; S = self-report; T = teacher report; SR = school records. <sup>a</sup>Significant ( $p < .05$ ) gender differences in the estimate for that parameter. \*  $p < .05$ . \*\*  $p < .01$ .

*Victimization to maladjustment to school achievement.* Model 1b tested the hypothesis that internalizing and externalizing problems mediate the link between subtypes of victimization and achievement (see Figure 3). Externalizing problems related more reliably ( $p < .01$ ) to achievement for boys relative to girls, whereas physical victimization was a more reliable ( $p < .01$ ) contributor of achievement for girls. With these estimates freed to vary by gender and all other path parameters set to be invariant across girls and boys, Model 1b fit the data well,  $\chi^2(87, N = 337) = 155.66, p < .01$  (CFI = .974; RMSEA = .049), and significantly better than the initial model with all path parameters set to be equal by gender,  $\chi^2_{diff}(2) = 9.42, p < .01$ . Similar to Model 1a, Model 1b explained a large (Cohen's  $d > 1.0$ ) and meaningful proportion of the variance in achievement for girls (20.8%;  $r_{effect\ size} = .456$ ) and almost double that for boys (39.2%;  $r_{effect\ size} = .626$ ). Externalizing problems added significantly to poorer achievement for girls and boys, with a significantly more robust association for boys. Physical victimization was associated significantly with lower achievement for girls but not boys. (See Figure 3.)

Support for mediation was found for Model 1b (see Figure 3). In support of the second mediation criterion (Baron & Kenny, 1986), the association between relational victimization and achievement declined in significance with the inclusion of maladjustment prob-

lems for boys (but not girls) as did the contribution of physical victimization to achievement for girls (but not boys), as indicated by a comparison of the coefficients presented in Figure 3 and the preliminary model. According to the tests of the indirect paths (MacKinnon et al., 2002), externalizing problems partially accounted for the influence of relational victimization on achievement for boys ( $z = -2.07, p < .05$ ) and physical victimization for girls ( $z = -2.00, p < .05$ ). Estimates for internalizing problems were not significant even though the association with achievement met the initial mediation criterion for girls. (See Figure 3.)

*Maladjustment to engagement to achievement.* Building on Models 1a and 1b, Model 1c examined school engagement as a proximal mediator of the relation between maladjustment and achievement (see Figure 4). A direct path from attitude and effort (indicator of engagement) to achievement was also included given the dependence of these assessments (i.e., teachers rated students' grades and attitude and effort simultaneously;  $r_s = .72$  for boys and  $.82$  for girls). The contributions of relational victimization and externalizing problems to engagement and of physical victimization to achievement were reliably ( $p < .05$ ) higher for boys relative to girls. In contrast, engagement related more reliably ( $p < .01$ ) to achievement for girls. With these four estimates freed to vary across gender and all other path estimates set to be invariant across gender, Model 1c fit the data reasonably well,

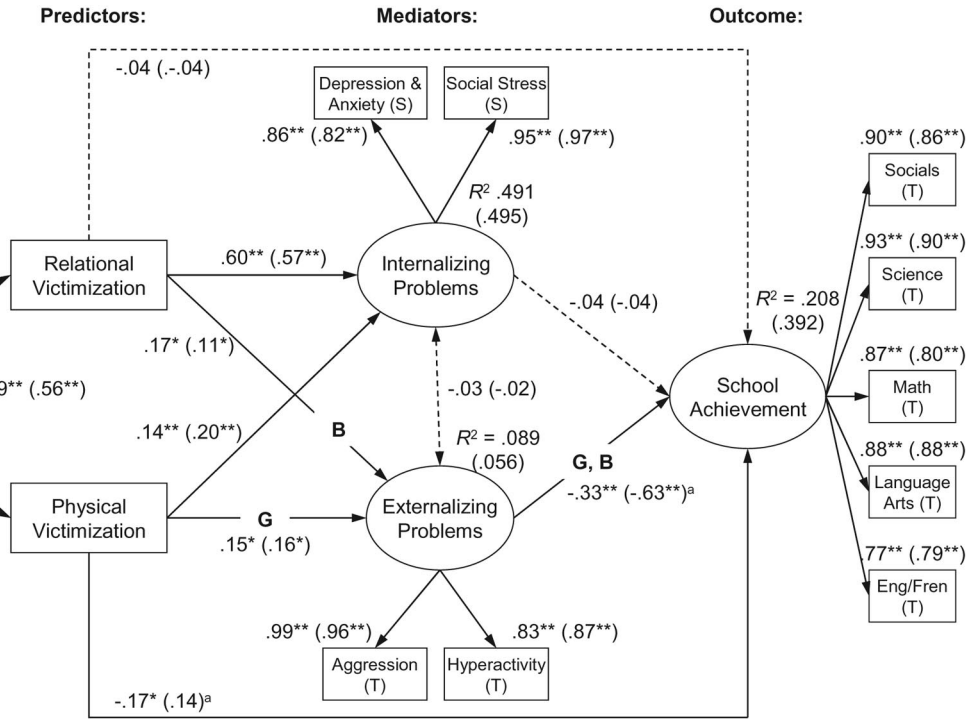


Figure 3. Standardized estimates of the direct and mediated paths from peer victimization to maladjustment to school achievement by gender. Model 1b:  $\chi^2(87, N = 337) = 155.66, p < .01$ ; comparative fit index = .974; root-mean-square error of approximation = .049. Standardized path coefficients shown for girls (and boys in parentheses). Dashed lines indicate nonsignificant paths. All factor loadings were significant ( $p < .01$ ). G = mediated path for girls; B = mediated path for boys; S = self-report; T = teacher report; Socials = social studies; Eng/Fren = English or French. <sup>a</sup>Significant ( $p < .05$ ) gender differences in the estimate for that parameter. <sup>\*</sup> $p < .05$ . <sup>\*\*</sup> $p < .01$ .

$\chi^2(174, N = 337) = 383.06, p < .01$  (CFI = .939; RMSEA = .060), and significantly better than the initial model with all path parameters equated across gender,  $\chi^2_{diff}(4) = 16.03, p < .01$ . Model 1c explained a large (Cohen's  $d > 1.0$ ), meaningful amount of variance in achievement for both girls (68.1%;  $r_{effect\ size} = .825$ ) and boys (66.3%;  $r_{effect\ size} = .814$ ). Indeed, the variance in achievement accounted for was more than three times as large for girls and more than one and a half times as large for boys as compared with Model 1b. As shown in Figure 4, physical victimization and internalizing and externalizing problems each related significantly and negatively to engagement for girls and boys, with a reliably more robust relation between externalizing problems and engagement for boys relative to girls. Engagement and attitude and effort also related significantly to better achievement for girls and boys, with the relation between engagement and achievement more robust for girls than for boys. Relational victimization also related significantly and positively to engagement for boys.

Mediation was supported for Model 1c (see Figure 4). Confirming the second mediation criterion (Baron & Kenny, 1986), the contributions of physical victimization and internalizing problems to achievement declined in significance for girls (but not boys) with the inclusion of the indirect paths via engagement, as confirmed by comparing the estimates shown in Figure 4 and the preliminary analyses. The relation between externalizing problems and achievement also declined in significance for both girls and

boys. Tests of the indirect paths between victimization and engagement via maladjustment were consistent with those presented in Model 1a (Figure 2), confirming the third mediation criterion (MacKinnon et al., 2002). In sum, both internalizing and externalizing problems partially accounted for the contributions of subtypes of victimization to engagement for girls. Externalizing problems also partially mediated the association between physical victimization and engagement for boys. Tests of the indirect paths via engagement were also significant; engagement mediated the contributions of internalizing problems and also physical victimization to achievement for girls ( $z_s = -2.15$  and  $-2.08, p < .05$ , respectively) and the link between externalizing problems and achievement for both girls ( $z = -3.25, p < .01$ ) and boys ( $z = -3.04, p < .01$ ). (See Figure 4.)

*Main Analyses: Alternative Maladjustment-to-Risk Hypotheses*

The competing proposition that subtypes of victimization also mediate the link between maladjustment and school functioning and the proximal process model of engagement as a mediator of the association between victimization and achievement were examined last.

*Maladjustment to victimization to school engagement.* Model 2a (the counterpart of Model 1a; Figure 2) examined subtypes of

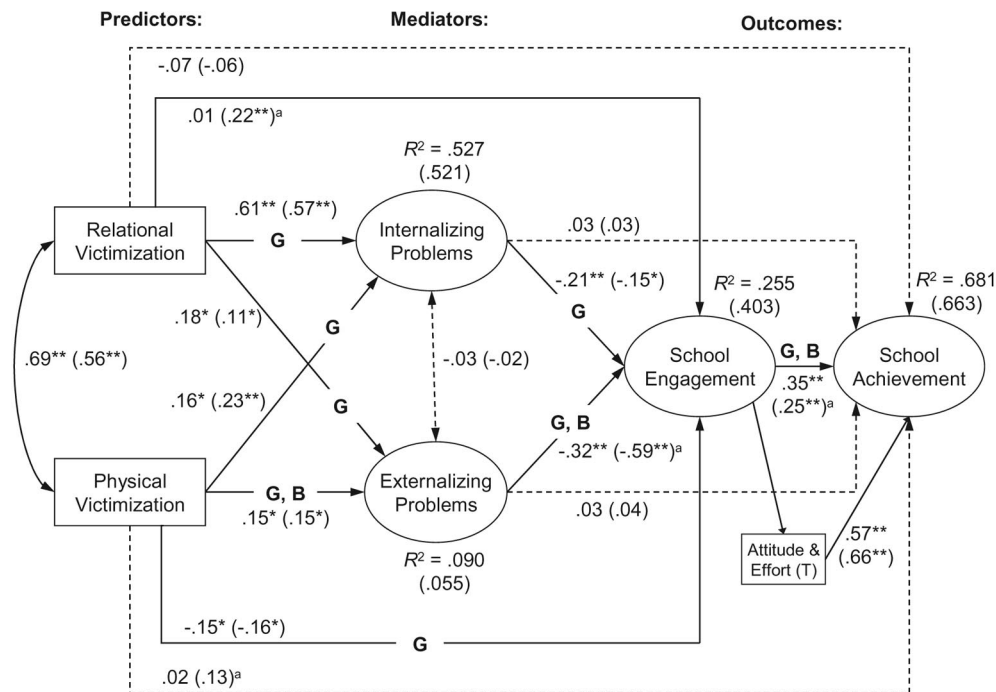


Figure 4. Standardized estimates of the direct and mediated paths from peer victimization to maladjustment to school engagement and achievement by gender. Model 1c:  $\chi^2(174, N = 337) = 383.06, p < .01$ ; comparative fit index = .939; root-mean-square error of approximation = .060. Standardized path coefficients shown for girls (and boys in parentheses). Dashed lines indicate nonsignificant paths. Measurement models are omitted to simplify the structural model presented. G = mediated path for girls; B = mediated path for boys; T = teacher report. <sup>a</sup> Significant ( $p < .05$ ) gender differences in the estimate for that parameter. \*  $p < .05$ . \*\*  $p < .01$ .

victimization as mediators of the link between maladjustment and engagement. Gender differences in the path parameters were consistent with Model 1a. With the path parameters from externalizing problems and relational victimization to engagement allowed to vary by gender and all other path estimates set to be equal across gender, fit of Model 2a was modest,  $\chi^2(68, N = 337) = 197.28, p < .01$  (CFI = .926; RMSEA = .075), and significantly better than the initial model with all path parameters set to be equal across gender,  $\chi^2_{diff}(2) = 9.59, p < .01$ . According to the Akaike information criterion (AIC), an estimate of the difference of fit statistics between nonnested models for which smaller values indicate better fit, Model 2a (AIC = 321.28) fit similarly to Model 1a (AIC = 318.22), suggesting equal support for the models. Model 2a accounted for a large proportion of the variance in engagement for girls (26.7%;  $r_{effect\ size} = .518$ ) and considerably more so for boys (39.3%;  $r_{effect\ size} = .627$ ). Physical victimization ( $p < .05$ ) and internalizing and externalizing problems ( $p < .01$ ) related significantly to poorer engagement for girls and boys, with the link between externalizing problems and engagement significantly more robust for boys relative to girls. Relational victimization related positively to engagement for boys ( $p < .05$ ). Modest indirect effects were found for Model 2a. The link between internalizing problems and engagement declined in significance for girls with the inclusion of the indirect paths via victimization, confirming the second mediation criterion (Baron & Kenny, 1986). Tests of the indirect paths (MacKinnon et al., 2002) showed that physical victimization partially mediated the relation between in-

ternalizing problems and engagement for girls and boys ( $z_s = -2.23, p < .05$ ) and between externalizing problems and engagement for girls and boys ( $z_s = -1.85, p = .06$ ).

*Maladjustment to victimization to school achievement.* Model 2b (the counterpart of Model 1b; Figure 3) tested subtypes of victimization as mediators of the association between maladjustment and achievement. Gender differences were consistent with Model 1b. With the path estimates from externalizing problems and physical victimization to achievement unconstrained across gender and all other path estimates constrained to be invariant across gender, Model 2b fit the data well,  $\chi^2(87, N = 337) = 155.63, p < .01$  (CFI = .974; RMSEA = .049), and significantly better than the preliminary model with all path estimates constrained across gender,  $\chi^2_{diff}(2) = 9.50, p < .01$ . Model 2b (AIC = 289.63) fit the data as well as Model 1b (AIC = 289.66) and accounted for a large, meaningful amount of the variance in achievement for girls (20.3%;  $r_{effect\ size} = .450$ ) and double that for boys (39.9%;  $r_{effect\ size} = .632$ ). Physical victimization related significantly to poorer achievement for girls only ( $p < .05$ ). Externalizing problems added further to significantly poorer achievement for both girls and boys ( $p < .01$ ). Mediation support for Model 2b was modest. The relation between internalizing problems and achievement declined in significance with the inclusion of victimization for girls, in support of the second mediation criterion (Baron & Kenny, 1986). Tests of the indirect paths (MacKinnon et al., 2002) showed that physical victimization me-

diated the relation between internalizing problems and achievement for girls only ( $z = -2.13, p < .05$ ).

*Victimization to engagement to achievement.* Model 2c (the counterpart of Model 1c; Figure 4) further examined engagement as a proximal mediator of the relations between subtypes of victimization and achievement (see Figure 5). Gender differences were consistent with Model 1c. With the path estimates from relational victimization and externalizing problems to engagement, physical victimization to achievement, and engagement to achievement freed to vary by gender and all other estimates constrained to be equal across girls and boys, Model 2c fit the data reasonably well,  $\chi^2(174, N = 337) = 382.74, p < .01$  (CFI = .939; RMSEA = .060), and significantly better than the initial model with all path parameters set to be equal across gender,  $\chi^2(4) = 16.14, p < .01$ . Fit of Model 2c (AIC = 574.74) was also similar to that of Model 1c (AIC = 575.06), suggesting equal support for the risk-to-maladjustment and the maladjustment-to-risk models. Model 2c explained a substantive, meaningful proportion of the variance in achievement for girls (68.0%;  $r_{\text{effect size}} = .825$ ) and boys (66.2%;  $r_{\text{effect size}} = .814$ ). As shown in Figure 5, physical victimization and internalizing and externalizing problems contributed significantly to poorer engagement, whereas engagement and attitude and effort related significantly to better achievement. The association between externalizing problems and engagement was more robust for boys relative to girls, whereas the link between

engagement and achievement was stronger for girls than for boys. Relational victimization related significantly and positively to engagement for boys.

Mediation was supported for Model 2c (see Figure 5). Confirming the second mediation criterion (Baron & Kenny, 1986), the contributions of physical victimization and also internalizing and externalizing problems to achievement declined in significance for girls with the inclusion of engagement, as indicated by a comparison of the estimates in Figure 5 and the preliminary model. The relation between externalizing problems and achievement also declined in significance for boys. Consistent with Model 2a, tests of the indirect paths (MacKinnon et al., 2002) showed that physical victimization partially mediated the associations between internalizing and externalizing problems and engagement for girls and boys. In turn, engagement mediated the contributions of physical victimization and internalizing problems to achievement for girls ( $z$ s =  $-2.13$  and  $-2.16, p < .05$ , respectively) and the association between externalizing problems and achievement for girls ( $z = -3.25, p < .01$ ) and boys ( $z = -3.02, p < .01$ ). (See Figure 5.)

The overall pattern of findings supports the hypothesis that subtypes of victimization contribute adversely to school functioning by interfering with adolescents' ability to regulate emotional distress and aggressive, disruptive behaviors. Modest domain specificity in these associations and more consistent mediation

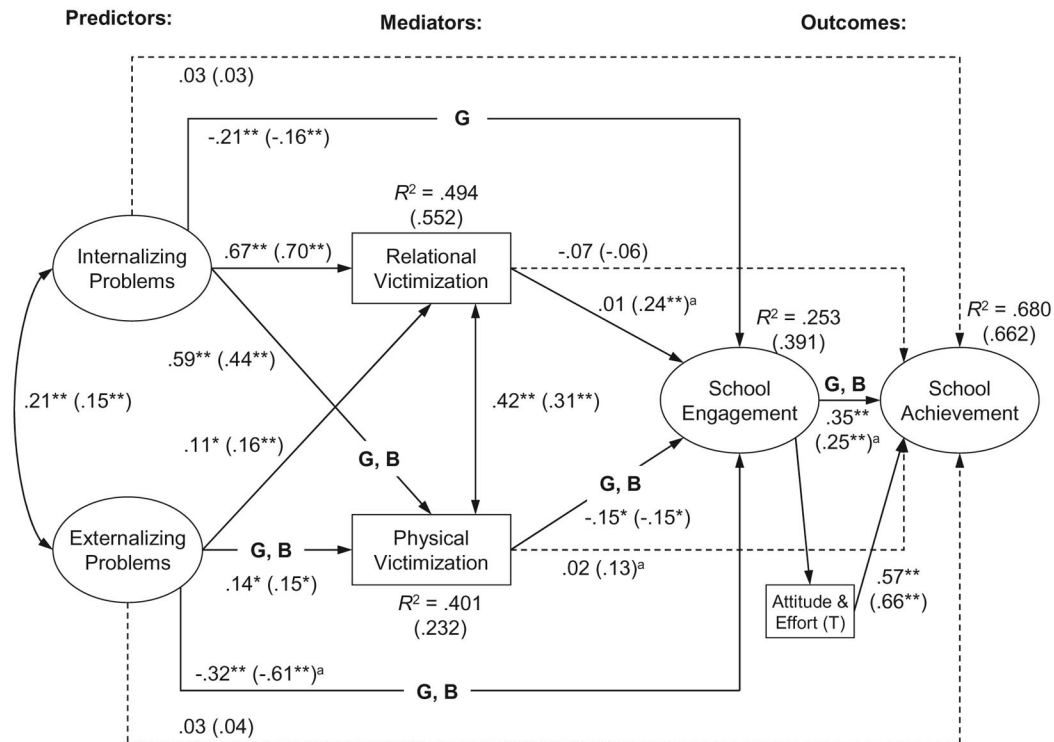


Figure 5. Standardized estimates of the direct and mediated paths from maladjustment to victimization to school engagement and achievement by gender. Model 2c:  $\chi^2(174, N = 337) = 382.74, p < .01$ ; comparative fit index = .939; root-mean-square error of approximation = .060. Standardized path coefficients shown for girls (and boys in parentheses). Dashed lines indicate nonsignificant paths. Measurement models are omitted to simplify the structural model presented. G = mediated path for girls; B = mediated path for boys; T = teacher report. <sup>a</sup> Significant ( $p < .05$ ) gender differences in the estimate for that parameter. \*  $p < .05$ . \*\*  $p < .01$ .



effects for girls than for boys were found. These cross-sectional data also support the notion that maladjustment mediates the relation between physical (but not relational) victimization and poor school functioning but provide limited support for the sequencing of these associations. Of note, these findings further support the hypothesis that engagement is a key proximal contributor of achievement.

### Discussion

The power to forecast and prevent school-related consequences of peer victimization in early adolescence requires a better understanding of the maladjustment processes underlying the associations between subtypes of victimization and school functioning. The current study advances this goal in three specific ways. First, in support of the risk-to-maladjustment model, internalizing and externalizing problems were identified as concurrent processes by which subtypes of victimization interfere with adolescents' engagement in learning and achievement outcomes, with modest domain specificity and gender differences in these relations. Second, modest support was also found for the maladjustment-to-risk model, suggesting that physical (but not necessarily relational) victimization also intervenes in the association between maladjustment and school functioning, especially for girls; however, the cross-sectional structure of these data cannot establish or confirm directionality. Third, engagement was identified as a proximal process linking maladjustment with achievement for girls and boys and also physical victimization with achievement for girls, emphasizing the value of this process for learning outcomes. Notably, these cross-sectional models demonstrated large, practical implications for school functioning and point to specific prevention targets that may aid in attenuating the costs of subtypes of victimization and maladjustment for school outcomes. The discussion below addresses these main findings while highlighting the gender differences observed.

#### *Risk-to-Maladjustment Model*

Consistent with theory on the differential etiology of internalizing and externalizing problems and gender differences in maladjustment (Crick & Zahn-Waxler, 2003; Leadbeater et al., 1995), internalizing problems partially mediated the influence of both relational and physical victimization on school engagement for girls (but not boys), with more robust paths from relational than from physical victimization (see Figure 2). Relational threats may contribute to internalizing problems for girls in particular because of their sensitivity to relational concerns (Rose & Rudolph, 2006) or because maladaptive cognitions that distort or exaggerate peer disapproval and disloyalty are reinforced (Hoglund & Leadbeater, 2007; Rudolph & Clark, 2001). Findings also suggest that physical victimization interferes with girls' (but not boys') ability to regulate emotional distress, possibly because they are preoccupied with self-protection and have few peer allies who can offer physical protection (Hodges & Perry, 1999). In turn, internalizing problems mediated the association between subtypes of victimization and engagement. Preoccupation with peer approval, loss of relationships, and self-protection might concomitantly distract girls from learning activities and drain the mental energy needed to participate in class. Emotional distress might also reinforce girls' anxiety

about academics (Cole et al., 2001) and working with intimidating peers as well as their beliefs that classmates and teachers are unavailable for support (Buhs et al., 2006; Furrer & Skinner, 2003).

Also in line with theory on developmental psychopathology (Cicchetti & Rogosch, 2002; Crick & Zahn-Waxler, 2003), externalizing problems partially mediated the relation between physical victimization and engagement for both girls and boys, with a modestly stronger link for boys relative to girls (see Figure 2). Physical threats may contribute most robustly to externalizing problems for boys owing to their orientation toward social dominance (Rose & Rudolph, 2006) or because maladaptive cognitions that overestimate peer-directed aggression and exaggerate concerns with self-protection and retribution are confirmed (Crick & Dodge, 1996; Hoglund & Leadbeater, 2007; Lochman & Dodge, 1998). Findings also suggest that physical and relational threats contribute similarly to aggressive, disruptive behaviors among girls, possibly because of incipient behavioral risks that were not captured here. Girls who violate social expectations for behavior (i.e., are physically aggressive, hyperactive, or impulsive) are reproached by both peers and teachers more often than girls who resist these gender nonnormative behaviors (Dhami et al., 2005; Schwartz, McFadyen-Ketchum, Dodge, Pettit, & Bates, 1999). In turn, externalizing problems partially mediated the concurrent relation between physical victimization and engagement for both girls and boys and the link between relational victimization and engagement for girls. Aggressive, disruptive adolescents may dislike school and be unwilling to invest in learning because they believe that classmates are conspiring against them (Lochman & Dodge, 1998) and they do not receive the individualized attention from teachers needed to capture their interest in learning (Wentzel, 1999). Their peers might also reinforce behaviors that are incompatible with learning activities, such as truancy (Ryan, 2001).

Externalizing problems also partially mediated the concurrent associations between subtypes of victimization and achievement, with important differences between girls and boys (see Figure 3). Consistent with theory on the costs of socially unexpected experiences (Crick, 1997), relational victimization contributed to poorer achievement for boys whereas physical victimization related negatively to achievement for girls. Boys might react aggressively to relational threats, as well as physical threats, because they are reinforced for externalized reactions to stress but admonished for emotional vulnerability (Maccoby, 2004). Girls, like boys, may retaliate aggressively against physical threats because of incipient externalizing problems (Dhami et al., 2005) or aggressive cognitions (Lochman & Dodge, 1998). In turn, aggressive adolescents may show poorer achievement because they are unmotivated and too distracted by peers to concentrate on academic tasks (Buhs et al., 2006). Concurrent levels of externalizing problems and low achievement may also be indicative of early onset aggression or learning difficulties that are exaggerated in the context of peer adversity (Duchesne et al., 2005; Ladd, 2006). Early onset learning problems and aggression might also co-contribute to victimization over time. However, Schwartz et al. (2005) found little support for a bidirectional association between victimization and academic skills once their concurrent association was controlled.

In contrast, internalizing problems did not mediate the relation between victimization and achievement even though these associations met the initial mediation criterion for girls. Externalizing

problems may be more salient for achievement than internalizing problems once their shared variance is accounted for because of the relative stability in externalizing problems and achievement in contrast to the higher instability in internalizing problems (Duchesne et al., 2005; Ladd, 2006; Roeser et al., 1999). Also, links between internalizing problems and achievement might become apparent only over time (Nishina et al., 2005; Schwartz et al., 2005) or, as the alternative model suggests, relate only indirectly via concurrent levels of victimization.

### *Maladjustment-to-Risk Model*

Theories on school functioning point to the salience of peer relationships for students' ability to commit to learning and to achieve well (Skinner et al., 1990; Wentzel, 1999). The cross-sectional findings reported here converge with this and short-term longitudinal research (Nishina et al., 2005) in showing that physical (but not relational) victimization also partially mediates the association between maladjustment and school disengagement for girls and boys and low achievement for girls (see Figure 5). Risks for victimization may be heightened for adolescents who show internalizing problems, because anxiety and emotional distress around intimidating peers can reinforce peers' negative actions. Adolescents who display externalizing problems may be likely targets for peer abuse, because they show poor self-restraint in limiting the retaliatory aggression that can also reinforce peer attacks (Hodges & Perry, 1999). In turn, physically victimized adolescents might justifiably dislike school and be more concerned with self-protection and avoiding their aggressors than with participating in learning activities (Buhs et al., 2006). Physical victimization also partially mediated the association between internalizing problems and low achievement for girls, possibly because these girls are overwhelmed by managing their peer anxiety and are cognitively unable to invest in completing the academic tasks necessary for higher achievement (Nishina et al., 2005). Relational victimization did not play a significant role in these alternative models, possibly because of the overall salience of physical threats for concurrent functioning in early adolescence. Relational victimization might also be a sanctioned group process used to regulate social goals and dominance and might reflect more social sophistication than physical victimization (see Archer, 2004).

Overall, the cross-sectional models tested here offer limited support for the direction of influence between subtypes of victimization and maladjustment and the most likely paths by which adolescents become disaffected with learning. Only longitudinal models can confirm the temporal sequencing and possible transactional associations between subtypes of victimization and maladjustment. Nonetheless, modestly more support was found for internalizing and externalizing problems as mediators of the relation between subtypes of victimization on school functioning, particularly for girls (see Figures 4 and 5). The risk-to-maladjustment model also converges with both theory and longitudinal research on the temporal association between peer adversity and maladjustment that spans middle childhood (Ladd, 2006). Still, engagement was the primary mediator of the contributions of maladjustment and physical victimization to achievement in the models tested.

### *Proximal Process Model*

School engagement was hypothesized to be a primary proximal process through which maladjustment relates to poor achievement, with modest gender differences in these associations. In line with this and theory on the social-motivational processes by which interpersonal relationships and maladjustment influence achievement (Skinner et al., 1990; Wentzel, 1999), engagement partially mediated the influence of externalizing problems on achievement for both girls and boys and the contributions of internalizing problems and physical victimization to achievement for girls only (see Figures 4 and 5). This suggests that regardless of victimization status, aggressive, disruptive boys show poor achievement outcomes primarily via their dislike of school and disengagement from the learning process. Findings for girls suggest that emotional distress, aggression, and episodes of physical victimization all contribute to risks for low achievement and, like boys, do so primarily through disengagement from learning.

Findings here suggest that struggles to manage feelings of hopelessness, anxiety, and stress in response to negative peer experiences can limit girls' enthusiastic engagement in learning and, in turn, learning outcomes, possibly because these girls connect unpleasant social experiences with school, feel disconnected from classmates, and hold pessimistic views of their academic abilities (Cole et al., 2001; Furrer & Skinner, 2003; Roeser et al., 1999). Trouble resisting retaliatory aggression in response to both relational and physical victimization for girls and physical victimization for boys may interfere with their commitment to learning because they avidly dislike school, have a history of truancy, show little cognitive flexibility in learning activities, or are reluctant to expend the effort necessary for high achievement (Connell et al., 1994; Duchesne et al., 2005; Furrer & Skinner, 2003). Physically victimized girls' curiosity and motivation for learning may also be constrained because they are justifiably scared to be at school and are too afraid to participate in class activities with their aggressors (Buhs et al., 2006). Although the data tested here were cross-sectional, it may be that aggressive adolescents and emotionally distressed girls in particular disengage from the learning process gradually and that chronic disengagement undermines their achievement over time (Connell et al., 1994; Furrer & Skinner, 2003; Roeser et al., 1999). Disengagement might also operate reciprocally with maladjustment or victimization over time and contribute to instability in achievement (Roeser et al., 1998).

The power of engagement to meaningfully influence the concurrent academic achievement of adolescents managing problematic peer relationships, emotional distress, and aggression urges further study of the specific mechanisms by which adolescents become disaffected with the learning process over time (Fredricks et al., 2004). Models that include social-cognitive processes related to both interpersonal conflicts and academic beliefs might be particularly informative for understanding how subtypes of victimization and maladjustment come to affect adolescents' investment in learning and achievement outcomes (e.g., Høglund & Leadbeater, 2007; Patrick, Ryan, & Kaplan, 2007). For instance, motivational beliefs related to adolescents' mastery goals and self-efficacy in the academic setting might intervene in the relations between subtypes of victimization and school engagement and achievement (Patrick et al., 2007). Differentiating among victimized adolescents who are truly disaffected with the learning

process and students who are struggling to do well but not succeeding is an important goal for future research on the indirect links via school engagement that were examined here (Blumenfeld et al., 2005).

Unearthing potential processes that link subtypes of victimization and maladjustment with school functioning in early adolescence and gender-linked vulnerability in these associations were the primary goals of the current study. The overall pattern of associations among subtypes of victimization, maladjustment, and school engagement and achievement found here converged with expectations and past research. However, the cross-sectional design reflects only the concurrent relations among these variables and does not adjust for prior levels of functioning that could importantly and differentially influence the results presented here (Buhs et al., 2006; Ladd, 2006; Roeser et al., 1998). Longitudinal models examining the unique contributions of chronic relational and physical victimization and maladjustment to school functioning are sorely absent from the literature at present but are likely forthcoming as participants in longitudinal studies mature. These studies are needed to establish whether the mediation findings identified here persist over time and influence long-term changes in school functioning. The cross-sectional design is also limited in its ability to persuasively clarify the direction of associations between victimization and maladjustment. Longitudinal models could unravel whether subtypes of victimization and maladjustment reciprocally influence school outcomes over time (Nishina et al., 2005; Rudolph & Hammen, 1999) or whether the temporal sequence is from victimization to maladjustment (Ladd, 2006; Schwartz et al., 2005). School functioning might also predict or transact with victimization or maladjustment over time, but research has yet to confirm this (Duchesne et al., 2005; Schwartz et al., 2005).

The modest domain specificity between subtypes of victimization and maladjustment that was identified here may have been constrained by these conservative, cross-sectional models or the moderate sample size (MacKinnon et al., 2002). Nonetheless, internalizing problems related more robustly to relational than to physical victimization, possibly because concurrent fluctuations in relational victimization are particularly salient for internalizing problems (Ladd & Troop-Gordon, 2003). The overall stability in externalizing problems and achievement patterns and discontinuity in internalizing problems observed over time (Ladd, 2006; Roeser et al., 1998) and gender differences in maladjustment (Crick & Zahn-Waxler, 2003) might explain why externalizing problems related more consistently to low achievement for boys than did internalizing problems. These associations might also indicate ongoing cognitive or behavioral learning difficulties for both girls and boys. In contrast to internalizing problems, externalizing problems were less well explained by victimization, possibly because of shared method variance, and related similarly to both subtypes of victimization, possibly because of early onset aggression that was not captured here (Ladd, 2006). Future research needs to confront the challenge of identifying specific relationship and maladjustment profiles that school engagement and achievement are particularly sensitive to (Hanish & Guerra, 2002; Roeser et al., 1999). Separate tests of the distinct components of engagement measured here might also yield differential paths from subtypes of victimization or maladjustment to achievement (Patrick et al., 2007).

Findings here are also limited by the reliance on self- and teacher-report data. For instance, associations between relational victimization and internalizing problems may have been inflated because of shared method variance. Greater domain specificity between victimization and maladjustment might be found with peer-reported victimization or with latent factors composed of self-, peer, and teacher reports. Nonetheless, different teachers reported on students' attitude, effort, and achievement, and absences were drawn from school records, strengthening findings for the school constructs. Differences between these cross-sectional findings and short-term longitudinal research (Nishina et al., 2005; Schwartz et al., 2005) might also reflect the measurement of victimization, such as self- versus peer report or global versus subtype, and achievement, such as absences modeled as achievement rather than engagement (Nishina et al., 2005).

In sum, the current study complements and extends past research on the complex processes by which subtypes of victimization and maladjustment relate to school engagement and achievement in early adolescence. The overall hints of domain specificity in the maladjustment processes linking subtypes of victimization with school functioning and gender differences in these associations suggest that targeted approaches to reduce risks for school disengagement and low achievement in early adolescence are needed. The alternative models further suggest that physical (but not relational) victimization also intervenes in how maladjustment interferes with engagement in learning activities and achievement in early adolescence. Longitudinal research is needed to confirm the temporal sequencing suggested by these associations.

Overall, findings here and elsewhere underscore the need for school-based prevention directed at both relational and physical victimization in middle school. Prevention that can simultaneously target feelings of sadness, anxiety, and stress in response to relationally oriented peer problems may be particularly responsive to girls' disengagement from learning. Prevention aimed at managing feelings of anger, hostility, and retaliation in response to physical threats may be especially attentive to boys' risks for disengagement (Rose & Rudolph, 2006). Such prevention may enhance adolescents' sense of belonging in the classroom and enjoyment of schooling while limiting feelings of frustration and anxiety with the learning process and, in turn, refine their ability for high academic achievement (Blumenfeld et al., 2005; Buhs et al., 2006). The potential malleability of school engagement and its promise in intervening in the costs of maladjustment and also physical (but not necessarily relational) victimization for low achievement makes this a worthy behavioral, emotional, and cognitive construct for further study. Prevention that can target victimization while inspiring disaffected adolescents to become interested and invested in the learning process may be a prime route to supporting academic achievement in early adolescence, for both girls and boys.

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