

Emotion Dysregulation as a Mechanism Linking Peer Victimization to Internalizing Symptoms in Adolescents

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Peer victimization experiences represent developmentally salient stressors among adolescents and are associated with the development of internalizing symptoms. However, the mechanisms linking peer victimization to adolescent psychopathology remain inadequately understood. This study examined emotion dysregulation as a mechanism linking peer stress to changes in internalizing symptoms among adolescents in a longitudinal design. Peer victimization was assessed with the Revised Peer Experiences Questionnaire (M. J. Prinstein, J. Boergers, & E. M. Vernberg, 2001) in a large ($N = 1,065$), racially diverse (86.6% non-White) sample of adolescents 11–14 years of age. Emotion dysregulation and symptoms of depression and anxiety were also assessed. Structural equation modeling was used to create a latent construct of emotion dysregulation from measures of discrete emotion processes and of peer victimization and internalizing symptoms. Peer victimization was associated with increased emotion dysregulation over a 4-month period. Increases in emotion dysregulation mediated the relationship between relational and reputational, but not overt, victimization and changes in internalizing symptoms over a 7-month period. Evidence for a reciprocal relationship between internalizing symptoms and relational victimization was found, but emotion dysregulation did not mediate this relationship. The implications for preventive interventions are discussed.

Keywords: peer victimization, emotion regulation, depression, anxiety, internalizing symptoms

The deleterious effects of stress on physical and mental health have been consistently documented (Brown, 1993; Dohrenwend, 1998; Kessler, 1997). A well-developed literature has identified the negative physiological effects of stress, particularly dysregulation in the neuroendocrine and immune systems, that represent biological mechanisms linking stress to disease (Kiecolt-Glaser, McGuire, Robles, & Glaser, 2002; Segerstrom & Miller, 2004). The psychological mechanisms underlying the association between stress and poor mental health outcomes are less well understood. In the current study, we examine the role of emotion dysregulation as a mechanism linking stress to internalizing symptoms among adolescents.

Adolescence represents an important period in which to examine mechanisms linking stress to the development of psychopathology. Changes in social systems (Collins, 1990, 2003; Larson & Richards, 1991) along with the biological and cognitive changes of adolescence present innumerable affectively laden situations in which stress must be successfully managed to ensure adaptive functioning. Given the myriad of changes occurring during this time period, it is not surprising that adolescence is associated with greater amounts of negative affect and perceived stress than late

childhood (Larson & Ham, 1993; Larson & Lampman-Petratis, 1989) and is characterized by high risk for the development of psychopathology (Hankin et al., 1998; Lewinsohn, Striegel-Moore, & Seeley, 2000). Stressful events become more closely linked to the emergence of negative affect during this period, rendering adolescents more emotionally vulnerable to the effects of stress (Larson & Ham, 1993; Larson, Moneta, Richards, & Wilson, 2002).

Peer victimization, or being the target of aggression by peers, represents a developmentally salient stressor for adolescents. Peer victimization occurs frequently in adolescent peer relationships and has damaging effects on social and psychological adjustment (Olweus, 1993; Prinstein, Boergers, & Vernberg, 2001). Peer victimization has been associated with symptoms of anxiety and depression in both cross-sectional (Hawker & Boulton, 2000) and longitudinal (Storch, Masia-Warner, Crisp, & Klein, 2005; Vernberg, Abwender, Ewell, & Beery, 1992) studies and predicts increased incidence of internalizing and externalizing disorders (Coie, Lochman, Terry, & Hyman, 1992). Childhood peer victimization is also associated with anxiety and depression in adulthood (Gladstone, Parker, & Malhi, 2006; Olweus, 1993), rendering these stress experiences particularly damaging. Two separate, but related, types of peer victimization have been identified in the literature. Both overt victimization, or being the target of physical aggression, threats, or verbal aggression (Prinstein et al., 2001; Vernberg, 1990), and relational victimization, in which relationship status is used as the mechanism of aggression through social exclusion, gossip, or other means (Crick & Bigbee, 1998; LaGreca & Harrison, 2005; Prinstein et al., 2001), have been demonstrated to predict internalizing symptoms and psychological distress among youths.

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Identifying mechanisms linking stress and peer victimization to negative mental health outcomes among adolescents is essential to develop effective, theory-based preventive interventions targeting those processes that lead from stress to psychopathology. One influential model has proposed that chronic stress leads to negative health outcomes through psychological pathways involving poor social competence and emotion dysregulation (Repetti, Taylor, & Seeman, 2002). Attempts to identify mechanisms linking peer victimization to psychopathology outcomes have largely focused on social-cognitive processes (Dodge, Bates, & Pettit, 1990), consistent with the social competence mechanism in Repetti et al.'s (2002) model. Disruptions in social information processing, such as increased attention to hostile cues, have been found to mediate the relationship between peer victimization and aggressive behavior (Dodge et al., 2003). In contrast, peer victimization leads to increased depressive symptoms primarily among youths with a depressogenic and self-critical attributional style (Prinstein & Aikins, 2004; Prinstein, Cheah, & Guyer, 2005), suggesting a role for a negative information-processing style as a moderator, not a mediator, of the association between victimization and internalizing symptoms. Indeed, social competence has not been found to mediate the association between peer victimization and adolescent depressive symptoms (LaGreca & Harrison, 2005).

Emotion dysregulation, the second putative mediator in Repetti et al.'s (2002) model, represents a potential mechanism responsible for the association between peer victimization and internalizing symptoms. Emotion regulation deficits are increasingly understood as important predictors of internalizing psychopathology among adolescents. Deficits in emotional understanding and ability to manage negative affect have been reported in youths with symptoms of both anxiety and depression (Abela, Brozina, & Haigh, 2002; Garber, Braafladt, & Weiss, 1995; Southam-Gerow & Kendall, 2000; Suveg & Zeman, 2004). For example, depressed youths are more likely to engage in ruminative responses to distress (Abela et al., 2002; Silk, Steinberg, & Morris, 2003) that are likely to prolong negative affect and reduce effective problem solving (Lyubomirsky & Nolen-Hoeksema, 1995; Nolen-Hoeksema, Morrow, & Fredrickson, 1993). Deficits in the ability to manage other negative emotions, such as anger, have also been documented in youths with internalizing symptomatology (Zeman, Shipman, & Suveg, 2002).

Several lines of evidence support the hypothesis that emotion regulation may account for the relationship between peer victimization and adolescent psychopathology. Chronic stress during childhood and adolescence leads to deficits in emotion regulation (Cicchetti & Toth, 2005; Repetti et al., 2002). In addition, both social exclusion (Baumeister, DeWall, Ciarocco, & Twenge, 2005) and stigma (Inzlicht, McKay, & Aronson, 2006)—two constructs that are conceptually similar to peer victimization—have been shown to be *ego depleting*, whereby exerting self-control in one domain consumes regulatory resources that are needed for future tasks in other domains (Inzlicht et al., 2006), providing support for the link between specific stressors and subsequent deficits in emotion regulation. Similarly, peer victimization experiences elicit negative emotions, including anger, sadness, and contempt (Mahady Wilton, Craig, & Pepler, 2000), and youths who are the victims of peer aggression exhibit high levels of emotional arousal and reactivity (Schwartz, Dodge, & Coie, 1993). Over time, the effort required to manage the increased arousal and negative affect associated with victimization experiences may eventually diminish individuals' coping resources and therefore their

ability to understand and adaptively manage their emotions, leaving them more vulnerable to adverse mental health outcomes. Although there is theoretical support for emotion dysregulation as a mediator of the association between peer victimization and psychopathology, to our knowledge no empirical studies have examined this association directly.

Importantly, the relationships between peer victimization and internalizing symptoms are likely reciprocal in nature. Although victimization experiences lead to increases in symptomatology over time, adolescents who are depressed or anxious are also more likely to be victimized by their peers than youths who do not have internalizing symptoms (Hodges & Perry, 1999; Vernberg, 1990). Adolescents with internalizing symptoms may be less able to assert or defend themselves in interactions with aggressive peers, thus reinforcing aggressive behavior (Hodges & Perry, 1999), or may lack friendships that could deter aggressive behavior from peers. Given that emotion dysregulation has been linked to poor social functioning and peer rejection among youths (Eisenberg et al., 1995; Losoya, Eisenberg, & Fabes, 1998), it may also play a role in explaining the association between internalizing symptoms and subsequent victimization. To date, however, the role of emotion dysregulation in explaining the reciprocal relationships between internalizing symptoms and peer victimization have yet to be examined.

The purpose of the current investigation was therefore to address these gaps in the literature using prospective data from a large, diverse, community-based sample of adolescents. We first examined the role of emotion dysregulation as a mediator of the association between peer victimization and changes in internalizing symptoms over time. We hypothesized that peer victimization would lead to subsequent increases in emotion dysregulation and in symptoms of depression and anxiety. Further, we predicted that emotion dysregulation would mediate the association between peer victimization and changes in symptomatology over time. To test this hypothesis, we examined baseline peer victimization as a predictor of increased emotion dysregulation over 4 months—a standard time interval in which to examine changes in psychological traits as a result of stressors (Brown & Harris, 1989). Changes in emotion dysregulation were then examined as mediators of the association between peer victimization and internalizing symptom development over 7 months following the baseline assessment. A similar length of follow-up has been used in prior research examining the effects of peer victimization on internalizing symptoms among adolescents (Vernberg, 1990; Vernberg et al., 1992). We also hypothesized that youths with internalizing symptoms would be more likely to be victimized by their peers, suggesting reciprocal relationships between peer victimization and symptoms of depression and anxiety. We examined emotion dysregulation as a mediator of this longitudinal association using the mediation approach described above. Importantly, we were able to apply a powerful test of mediation using a longitudinal design with three separate assessments (Maxwell & Cole, 2007).

Method

Participants

The sample for this study was recruited from the total enrollment of two middle schools (Grades 6–8) in central Connecticut

that agreed to participate in the study (students in self-contained special education classrooms and technical programs who did not attend school for the majority of the school day were excluded). The community in which the schools are located is a small urban community (metropolitan population of 71,538). Schools were chosen for the study on the basis of the demographic characteristics of the school district and their willingness to participate.

The parents of all eligible children ($N = 1,567$) in the participating middle schools were asked to provide active consent for their children to participate in the study. Parents who did not return written consent forms to the school were contacted by telephone. Of the parents, 22% did not return consent forms and could not be reached to obtain consent, and 6% declined to provide consent. The overall participation rate in the study at baseline was 72%. Of the participants who were present at baseline, 221 (20.8%) did not participate at the Time 2 assessment, and 217 (20.4%) did not participate at the Time 3 assessment, largely because of transient student enrollment in this district. Data from the school district indicate that over the 4-year period from 2000–2004, 22.7% of students had left the district (Connecticut Department of Education, 2006). We conducted analyses using the sample of 1,065 participants who were present at the baseline assessment, excluding participants who were present at Time 2 and/or Time 3 but not at Time 1.

The baseline sample included 51.2% ($n = 545$) boys and 48.8% ($n = 520$) girls. Participants were evenly distributed across grade level. The race/ethnicity composition of the sample was as follows: 13.2% ($n = 141$) non-Hispanic White, 11.8% ($n = 126$) non-Hispanic Black, 56.9% ($n = 610$) Hispanic/Latino, 2.2% ($n = 24$) Asian/Pacific Islander, 0.2% ($n = 2$) Native American, 0.8% ($n = 9$) Middle Eastern, 9.3% ($n = 100$) biracial/multiracial, and 4.2% ($n = 45$) other racial/ethnic groups. Of the participants, 27% ($n = 293$) reported living in single-parent households. The community in which the participating middle schools resided had a uniformly lower socioeconomic status, with a per capita income of \$18,404 (Connecticut State Department of Education, 2006, on the basis of data from 2001). School records indicated that 62.3% of students qualified for free or reduced lunch in the 2004–2005 school year. There were no differences across the two schools in demographic variables.

Measures

Internalizing symptoms and emotion dysregulation were each assessed with multiple measures. We assessed internalizing symptoms using measures of both depression and anxiety. Poor emotional understanding, dysregulated expression of anger and sadness, and rumination were assessed as indicators of emotion dysregulation.

Peer victimization. The Revised Peer Experiences Questionnaire (RPEQ; Prinstein et al., 2001) was used to assess participants' peer victimization experiences. The RPEQ was developed from the Peer Experiences Questionnaire (Vernberg, Jacobs, & Hershberger, 1999) and assesses overt, relational, and reputational victimization by peers. The questionnaire includes 18 items that ask participants to rate how often an aggressive behavior was directed toward them in the past year on a 5-point Likert scale ranging from 1 (*never*) to 5 (*a few times a week*). The original and revised measure has demonstrated good test–retest reliability, in-

ternal consistency, and convergent validity (Prinstein et al., 2001; Vernberg, Fonagy, & Twemlow, 2000). The RPEQ assesses each of the following forms of victimization: overt (e.g., “A kid threatened to hurt or beat me up”), relational (“To get back at me, another kid told me that he or she would not be my friend”), and reputational (“A kid gossiped about me so that others would not like me”). Scores are obtained by summing the items within each subscale. The Overt Victimization subscale includes four items for scores ranging from 4 to 20, the Relational Victimization subscale includes five items for scores ranging from 5 to 25, and the Reputational Victimization subscale includes three items for scores ranging from 3 to 15. Each of the RPEQ victimization subscales demonstrated adequate internal consistency in this sample: overt ($\alpha = .78$), relational ($\alpha = .79$), and reputational ($\alpha = .79$).

Depressive symptoms. The Children's Depression Inventory (CDI; Kovacs, 1992) is a widely used self-report measure of depressive symptoms in children and adolescents. The CDI includes 27 items consisting of three statements (e.g., “I am sad once in a while,” “I am sad many times,” and “I am sad all the time”) representing different levels of severity of a specific symptom of depression. The CDI has sound psychometric properties, including internal consistency, test–retest reliability, and discriminant validity (Kovacs, 1992; Reynolds, 1994). The item pertaining to suicidal ideation was removed from the measure at the request of school officials and the human subjects committee. The 26 remaining items were summed to create a total score ranging from 0 to 52. The CDI demonstrated good reliability in this sample ($\alpha = .82$).

Anxiety symptoms. The Multidimensional Anxiety Scale for Children (MASC; March, Parker, Sullivan, Stallings, & Conners, 1997) is a 39-item, widely used measure of anxiety in children. The MASC assesses physical symptoms of anxiety, harm avoidance, social anxiety, and separation anxiety, and is appropriate for children 8–19 years of age. Each item presents a symptom of anxiety, and participants indicate how true each item is for them on a 4-point Likert scale ranging from 0 (*never true*) to 3 (*very true*). A total score, ranging from 0 to 117, is generated by summing all items. The MASC has high internal consistency and test–retest reliability across 3-month intervals, and it has established convergent and divergent validity (Muris, Merckelbach, Ollendick, King, & Bogie, 2002). The MASC demonstrated good reliability in this sample ($\alpha = .88$).

Poor emotional understanding. We assessed emotional understanding using an eight-item subscale from the Emotion Expression Scale for Children (EESC; Penza-Clyve & Zeman, 2002), which provides statements involving lack of emotional awareness and understanding. Children respond to items on a 5-point Likert scale ranging from 1 (*not at all true*) to 5 (*extremely true*). The eight items are summed to generate a total score ranging from 8 to 40. Higher scores on this subscale reflect *lack* of emotional understanding. Representative items from this scale are “I have feelings that I can't figure out” and “I often do not know how I am feeling.” The EESC has high internal consistency and moderate test–retest reliability, and the construct validity of the measure has been established (Penza-Clyve & Zeman, 2002). This scale has been used previously with early adolescents (Sim & Zeman, 2005, 2006), and demonstrated good reliability in this sample ($\alpha = .82$).

Dysregulated emotion expression. The Children's Sadness Management Scale (CSMS) and the Children's Anger Management Scale (CAMS) assess both adaptive and maladaptive aspects

of emotion expression and regulation for the specific emotions of sadness and anger (Zeman, Shipman, & Penza-Clyve, 2001). We used the Dysregulation subscale of each of these measures, which assesses the extent to which children engage in maladaptive or inappropriate expressions of emotion, such as excessive crying. Higher scores on this scale reflect higher levels of emotion dysregulation. The CSMS contains 12 items, and the CAMS contains 11 items. Children respond on a 3-point Likert scale ranging from 1 (*hardly ever*) to 3 (*often*). The Dysregulation subscale for each measure contains three items that are summed to create scores ranging from 3 to 9. The scales have demonstrated adequate reliability, and their construct validity has been established (Zeman et al., 2001). These scales have been used in prior research with early adolescents (Sim & Zeman, 2005, 2006). Representative items from the dysregulation scale are "I attack whatever it is that is making me angry" (CAMS), and "I cry and carry on when I'm sad" (CSMS). The Dysregulation subscale of the CSMS ($\alpha = .60$) and the CAMS ($\alpha = .66$) each demonstrated adequate reliability.

Rumination. The Children's Response Styles Questionnaire (CRSQ; Abela et al., 2002) is a 25-item scale that assesses the extent to which children respond to sad feelings with rumination, defined as self-focused thought concerning the causes and consequences of depressed mood, distraction, or problem solving. The measure is modeled after the Response Styles Questionnaire (Nolen-Hoeksema & Morrow, 1991) that was developed for adults. For each item, youths are asked to rate how often they respond in that way when they feel sad on a 4-point Likert scale ranging from 1 (*almost never*) to 4 (*almost always*). The Rumination subscale includes 13 items that are summed to generate a score ranging from 13 to 42. Sample items include "Think about a recent situation wishing it had gone better" and "Think why can't I handle things better?" The reliability and validity of the CRSQ have been demonstrated in samples of early adolescents (Abela et al., 2002). The CRSQ Rumination subscale demonstrated good reliability in this study ($\alpha = .86$).

Procedure

Participants completed study questionnaires during their homeroom period. All questionnaires used in the present analyses were administered at Time 1 and Time 3, and the emotion dysregulation measures were additionally administered at Time 2. Four months elapsed between the Time 1 (November 2005) and the Time 2 (March 2006) assessments, and 3 months elapsed between the Time 2 and the Time 3 (June 2006) assessments. This time frame was chosen to allow the maximum time between assessments to observe changes in internalizing symptoms while also ensuring that all assessments occurred within the same academic year to avoid high attrition. Given time constraints imposed by the school, we were only able to assess potential mediators at Time 2, whereas all study measures were administered at Times 1 and 3. Participants were assured of the confidentiality of their responses and the voluntary nature of their participation.

Data Analytic Plan

We used structural equation modeling to perform the mediation analyses using AMOS 6.0 software (Arbuckle, 2005). We conducted the analyses using the full information maximum likelihood

estimation method, which estimates means and intercepts to handle missing data. We created a latent variable representing emotion dysregulation using the observed variables of poor emotional awareness, dysregulated expression of anger and of sadness, and rumination. We created multiply indicated latent variables for both peer victimization and internalizing symptoms using parcels of items from the relevant scales. We created parcels using the domain representative approach, which accounts for the multidimensionality of these outcomes (Little, Cunningham, Shahar, & Widaman, 2002), such that each parcel included items from each of the subscales of the relevant measures. In structural equation modeling, the use of parcels to model constructs as latent factors, as opposed to an observed variable representing a total scale score, confers a number of psychometric advantages including greater reliability, reduction of error variance, and increased efficiency (Kishton & Wadaman, 1994; Little et al., 2002).

After testing the measurement models for all constructs, the mediation analyses proceeded as follows: Time 1 peer victimization was examined as a predictor of emotion regulation deficits at Time 2, controlling for Time 1 emotion dysregulation. Emotion regulation deficits at Time 2 were then evaluated as predictors of internalizing symptoms at Time 3, controlling for Time 1 symptoms. We examined the full mediation model using the product of coefficients method to evaluate the hypothesis that emotion regulation deficits mediate the longitudinal relationship between peer victimization and internalizing symptomatology. Sobel's standard error approximation was used to test the significance of the intervening variable effect (Sobel, 1982). The product of coefficients approach is associated with low bias and Type 1 error rate, accurate standard errors, and adequate power to detect small effects (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). The mediation model was then examined for overt, relational, and reputational victimization separately to determine whether mediation effects were consistent across subtypes of victimization. Only participants who were present at baseline ($N = 1,065$) were included in mediation analyses.

An alternative model of directionality was then examined in which the longitudinal association between Time 1 internalizing symptoms and Time 3 peer victimization was mediated by emotion regulation deficits. Analyses proceeded in the same manner as the previous mediation analyses. Finally, we examined the role of gender as a moderating variable. Multigroup analyses were conducted to examine whether the process of mediation was moderated by gender. Each of the mediation paths was constrained to be equal for male and female participants, and we examined the difference in model fit using a chi-square test.

Results

Attrition

Analyses were first conducted to determine whether participants who did not complete all three assessments differed from those who completed the baseline and both follow-up assessments. Univariate analyses of variance were conducted for continuous outcomes with attrition as a between-subjects factor. Chi-square analyses were performed for dichotomous outcomes. These analyses revealed that participants who completed the baseline but not both follow-up assessments were more likely to be female, $\chi^2(1, N =$

1,065) = 6.85, $p < .01$, but did not differ in grade level, race/ethnicity, or being from a single-parent household ($ps > .10$). Participants who did not complete at least one of the follow-up assessments did not differ from participants who completed all three assessments on baseline depression or anxiety symptoms, levels of peer victimization, emotional awareness, dysregulated sadness, dysregulated anger, or rumination (all $ps > .10$).

Descriptive Statistics

Table 1 displays the means and standard deviations of all measures at each time point by gender. The means in this sample are similar to values obtained in other samples of early adolescents (i.e., within one standard deviation). Means for dysregulated negative emotion, depression, and anxiety in the present sample are consistent with those reported in other samples (Muris et al., 2002; Twenge & Nolen-Hoeksema, 2002; Zeman et al., 2001). Means for overt and relational victimization, as well as poor emotional awareness, are slightly higher but within the average range reported in other samples (LaGreca & Harrison, 2005; Penza-Clyve & Zeman, 2002). Rumination scores in the present sample are slightly lower but within the average range reported in a sample of seventh graders (Abela et al., 2002). Table 2 provides the zero-order correlations among all study measures. As expected, peer victimization was positively associated with emotion dysregulation

and internalizing symptoms, which were positively associated with one another.

Measurement Models

We constructed the measurement model of emotion dysregulation using four indicator variables: poor emotional awareness, dysregulated expression of anger, dysregulated expression of sadness, and ruminative responses to distress. For the hypothesized model, $\chi^2(2, N = 1,051) = 1.21, p = .299$, comparative fit index (CFI) = .99, and root-mean-square error of approximation (RMSEA) = .01 (90% confidence interval [CI] = .00–.06). Thus, all fit indices indicated that the measurement model of emotion dysregulation fit the data very well.

We constructed the measurement models for peer victimization and internalizing symptoms from parcels of items created using the domain representative approach (Little et al., 2002), such that each parcel included items from each of the subscales of the relevant measures. The peer victimization model was created from three parcels—each including items reflecting overt, relational, and reputational victimization from the RPEQ—and fit the data well, $\chi^2(1, N = 986) = 22.57, p < .01$, CFI = .99, RMSEA = .09 (90% CI = .06–.12). The internalizing symptoms model was created from four parcels—each of which included items from the CDI and each of the subscales of the MASC—and fit the data well,

Table 1
Means (and Standard Deviations) of Peer Victimization, Emotion Regulation, and Symptom Measures by Gender

Measure	Male participants	Female participants	Total
Time 1			
RPEQ—overt victimization	7.43 (3.30)	6.73 (3.14)	7.07 (3.24)
RPEQ—relational victimization	9.14 (3.31)	9.24 (3.57)	9.21 (3.56)
RPEQ—reputational victimization	5.69 (2.84)	5.66 (2.80)	5.73 (2.84)
EESC—poor emotional awareness	17.98 (6.51)	19.13 (7.17)	18.67 (7.02)
CSMS—dysregulated sadness	4.35 (1.38)	4.96 (1.54)	4.71 (1.50)
CAMS—dysregulated anger	5.51 (1.74)	5.28 (1.60)	5.43 (1.63)
CRSQ—rumination	9.33 (7.40)	12.31 (8.05)	10.94 (7.65)
CDI—depression	8.50 (5.99)	9.62 (6.40)	9.67 (6.44)
MASC—anxiety	35.90 (14.56)	43.03 (14.70)	40.19 (15.39)
Time 2			
EESC—poor emotional awareness	19.17 (6.43)	20.88 (7.35)	19.81 (6.79)
CSMS—dysregulated sadness	4.31 (1.33)	4.95 (1.40)	4.66 (1.65)
CAMS—dysregulated anger	5.44 (1.63)	5.55 (1.55)	5.53 (1.64)
CRSQ—rumination	8.67 (6.27)	12.16 (8.43)	10.84 (7.65)
Time 3			
RPEQ—overt victimization	7.22 (3.49)	6.87 (2.98)	7.07 (3.28)
RPEQ—relational victimization	8.83 (4.06)	9.55 (3.67)	9.17 (3.82)
RPEQ—reputational victimization	5.44 (2.83)	6.05 (2.68)	5.77 (2.79)
EESC—poor emotional awareness	17.41 (7.49)	18.84 (7.19)	18.40 (7.47)
CSMS—dysregulated sadness	4.50 (1.50)	5.03 (1.50)	4.79 (1.53)
CAMS—dysregulated anger	5.29 (1.81)	5.66 (1.71)	5.52 (1.73)
CRSQ—rumination	7.55 (6.73)	11.57 (8.57)	10.18 (8.07)
CDI—depression	9.70 (8.18)	10.73 (7.74)	10.63 (8.15)
MASC—anxiety	30.32 (16.70)	37.28 (17.16)	34.80 (18.05)

Note. Higher scores on emotion regulation measures indicate higher levels of emotion dysregulation. RPEQ = Revised Peer Experiences Questionnaire; EESC = Emotion Expression Scale for Children; CSMS = Children's Sadness Management Scale; CAMS = Children's Anger Management Scale; CRSQ = Children's Response Styles Questionnaire; CDI = Children's Depression Inventory; MASC = Multidimensional Anxiety Scale for Children.

Table 2
Correlations Between Peer Victimization, Symptoms, and Emotion Regulation Characteristics

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1. RPEQ–overt victimization (T1)	—																		
2. RPEQ–relational victimization (T1)	.67**	—																	
3. RPEQ–reputational victimization (T1)	.66**	.63**	—																
4. CDI–depression (T1)	.31**	.32**	.27**	—															
5. MASC–anxiety (T1)	.30**	.34**	.26**	.28**	—														
6. EESC–poor emotional awareness (T1)	.31**	.38**	.32**	.40**	.42**	—													
7. CSMS–dysregulated sadness (T1)	.19**	.25**	.19**	.21**	.31**	.30**	—												
8. CAMS–dysregulated anger (T1)	.11**	.13**	.10**	.25**	.01	.19**	.20**	—											
9. CRSQ–rumination (T1)	.28**	.37**	.29**	.42**	.55**	.56**	.35**	.16**	—										
10. EESC–poor emotional awareness (T2)	.18**	.29**	.22**	.35**	.33**	.48**	.20**	.16**	.36**	—									
11. CSMS–dysregulated sadness (T2)	.12**	.17**	.11**	.15**	.17**	.18**	.29**	.07	.21**	.30**	—								
12. CAMS–dysregulated anger (T2)	.13**	.14**	.16**	.19**	.09*	.18**	.14**	.38**	.17**	.23**	.19**	—							
13. CRSQ–rumination (T2)	.23**	.29**	.29**	.39**	.43**	.43**	.29**	.08*	.57**	.51**	.34**	.24**	—						
14. RPEQ–overt victimization (T3)	.41**	.34**	.32**	.18**	.16**	.19**	.11**	.14**	.21**	.25**	.17**	.17**	.24**	—					
15. RPEQ–relational victimization (T3)	.28**	.39**	.29**	.19**	.26**	.20**	.14**	.09*	.29**	.29**	.21**	.18**	.30**	.71**	—				
16. RPEQ–reputational victimization (T3)	.25**	.31**	.35**	.20**	.16**	.18**	.13**	.13**	.25**	.26**	.18**	.15**	.28**	.72**	.72**	—			
17. CDI–depression (T3)	.25**	.32**	.21**	.54**	.13**	.23**	.17**	.24**	.23**	.30**	.17**	.24**	.33**	.23**	.22**	.21**	—		
18. MASC–anxiety (T3)	.25**	.34**	.25**	.24**	.53**	.31*	.25**	.02	.35**	.36**	.28**	.10**	.44**	.29**	.37**	.28**	.33**	—	

Note. Correlations are reported for peer victimization at Time 1 (T1) and Time 3 (T3), emotion regulation deficits at T1 and Time 2 (T2), and symptoms at T1 and T3. RPEQ = Revised Peer Experiences Questionnaire; CDI = Children’s Depression Inventory; MASC = Multidimensional Anxiety Scale for Children; EESC = Emotion Expression Scale for Children; CSMS = Children’s Sadness Management Scale; CAMS = Children’s Anger Management Scale; CRSQ = Children’s Response Styles Questionnaire.

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

$\chi^2(2, N = 1,065) = 4.58, p = .01, CFI = .99, RMSEA = .05$ (90% CI = .02–.08).

Mediation Analyses

Emotion dysregulation was examined as a mediator of the longitudinal relationship between peer victimization and internalizing symptoms. Time 1 peer victimization was associated with Time 2 emotion dysregulation, controlling for emotion dysregulation at Time 1 ($\beta = .11, p < .01$). Time 2 emotion dysregulation was associated with Time 3 internalizing symptoms, controlling for Time 1 symptoms ($\beta = .36, p < .001$). Time 1 internalizing symptoms were associated with nearly all Time 2 emotion dysregulation indicator variables in bivariate analyses (see Table 2). As such, a path from Time 1 internalizing symptoms to Time 2 emotion dysregulation was included in the final mediation model. The covariance between Time 1 internalizing symptoms and Time 1 emotion dysregulation was also modeled.

In the full mediation model, Time 1 peer victimization was no longer a significant predictor of Time 3 internalizing symptoms, controlling for Time 1 symptoms and Time 1 emotion dysregulation, when Time 2 emotion dysregulation was added to the model ($\beta = .06, p = .096$; see Figure 1). Sobel’s z -test revealed a

significant indirect effect of peer victimization on internalizing symptoms through emotion dysregulation ($z = 2.42, p = .016$). All fit indices indicated that the model fit the data well: $\chi^2(64, N = 986) = 661.4, p < .001, CFI = .95, RMSEA = .05$ (90% CI = .04–.05).

We next examined whether mediation effects were consistent across the three subtypes of peer victimization. In the final mediation model, a significant indirect effect for relational victimization ($z = 3.08, p < .001$) and reputational victimization ($z = 3.06, p < .001$) on internalizing symptoms was found through emotion dysregulation but not for overt victimization ($z = 0.95, p = .343$). Both the relational model, $\chi^2(64, N = 986) = 671.0, p < .001, CFI = .94, RMSEA = .05$ (90% CI = .04–.05), and the reputational model, $\chi^2(64, N = 986) = 599.1, p < .001, CFI = .95, RMSEA = .05$ (90% CI = .04–.05), fit the data well.

Reciprocal Relationships

We next examined the longitudinal relationship between internalizing symptoms and peer victimization and the role of emotion dysregulation as a mediator of that relationship. Time 1 internalizing symptoms were not associated with Time 3 peer victimization, controlling for victimization at Time 1 ($\beta = .07, p = .132$).

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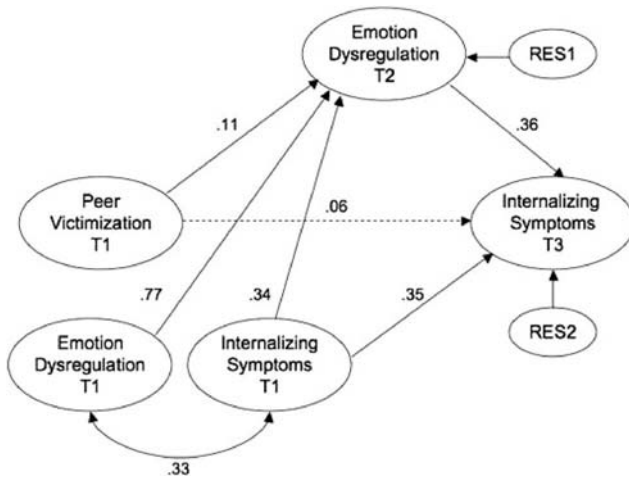


Figure 1. The final mediational model for internalizing symptoms. Numbers represent standardized path coefficients (beta). All paths shown are significant ($p < .05$), except those drawn with broken lines. All constructs were modeled as latent variables. Because of space constraints, indicator variables are not displayed. T = Time; RES = Residual.

When we examined the subtypes of victimization, internalizing symptoms marginally predicted relational ($\beta = .11, p = .058$) but not overt ($\beta = -.01, p = .886$) or reputational ($\beta = .08, p = .132$) victimization. Internalizing symptoms at Time 1 were not associated with Time 2 emotion dysregulation after controlling for Time 1 emotion dysregulation ($\beta = .03, p = .720$). Because internalizing symptoms did not longitudinally predict Time 2 emotion dysregulation, we did not examine the full mediation model. Thus, emotion dysregulation did not mediate the longitudinal association between internalizing symptoms and peer victimization.

Gender Effects

We examined whether the role of emotion dysregulation as a mediator of the relationship between relational and reputational victimization and subsequent internalizing symptoms was modified by gender. We did not examine overt victimization because emotion dysregulation did not mediate the association between overt victimization and internalizing symptoms. When the mediation paths of interest (see Figure 1) were constrained to equivalence across male and female participants, the model fit did not significantly worsen for relational victimization, $\chi^2(3, N = 986) = 3.35, p = .34$, or reputational victimization, $\chi^2(3, N = 986) = 1.58, p = .66$, indicating that the process and strength of mediation was consistent across gender.

Discussion

Given the high importance placed on peer relationships during adolescence (Larson & Richards, 1991), social rejection and victimization experiences during this period represent particularly salient stressors. The purpose of the current investigation was to examine the role of emotion dysregulation as a mechanism linking peer victimization to internalizing symptoms among adolescents. As hypothesized, peer victimization was associated with increases in emotion dysregulation over time. This increased emotion dys-

regulation, in turn, accounted for the association between peer victimization and subsequent changes in symptoms among both male and female adolescents. The conceptualization of emotion dysregulation as a pathway linking peer victimization to psychopathology is consistent with prior theoretical work linking chronic stress to negative mental health outcomes (Repetti et al., 2002), as well as evidence suggesting that stressful life events and chronic stress associated with adverse rearing environments disrupt the adaptive processing of emotion (Cicchetti & Toth, 2005; McLaughlin & Hatzenbuehler, 2009).

These findings extend the literature on peer victimization and psychopathology in several important ways. To our knowledge, this study is the first to document prospectively that peer victimization is associated with subsequent increases in emotion dysregulation among adolescents. These results suggest that the effort required to manage the negative emotions elicited by victimization experiences may deplete the resources necessary for self-regulation and reduce subsequent ability to effectively manage negative affect, consistent with ego depletion models of stigma and social exclusion (Baumeister et al., 2005; Inzlicht et al., 2006).

Our results also indicate that the increases in emotion dysregulation associated with peer victimization account for subsequent increases in symptoms of depression and anxiety, consistent with prior research documenting an association between emotion dysregulation and youth internalizing symptomatology (Garber et al., 1995; Suveg & Zeman, 2004). These findings make several novel contributions to the peer victimization literature. First, prior research has not clearly identified mechanisms linking victimization and internalizing symptoms. To date, the social-cognitive processes that have been found to account for the relationship between victimization and externalizing symptoms have not been found to link peer victimization and internalizing symptoms. Our findings provide novel evidence for emotion dysregulation as a mechanism in this association. Second, the few studies that have examined mechanisms accounting for the victimization–psychopathology association have utilized cross-sectional designs that cannot establish causal mechanisms (Hawker & Boulton, 2000). In contrast, this investigation tested a longitudinal mediation model with multiple assessments.

Analyses of reciprocal relations between symptomatology and subsequent victimization indicated that internalizing symptoms marginally predicted increases in relational, but not overt or reputational, victimization. On the one hand, these findings are consistent with prior research linking internalizing symptoms to subsequent peer rejection (Hodges & Perry, 1999; Storch et al., 2005; Vernberg, 1990) and suggest that adolescents with symptoms of depression and anxiety may be more likely to be targets of relational but not other types of victimization by peers. These victimization experiences, in turn, place them at higher risk for the development of internalizing symptoms, perpetuating a cycle of victimization and distress. On the other hand, the longitudinal relationship between internalizing symptoms and subsequent victimization did not reach statistical significance in this study, suggesting a weak prospective relationship in our sample. Notably, a longitudinal association between adolescent internalizing symptoms and subsequent peer rejection has not been consistently identified in the literature (Vernberg et al., 1992). Prior research reporting a positive association has utilized predominantly White middle-class samples and slightly longer follow-up periods

(Hodges & Perry, 1999; Storch et al., 2005), and the weaker association in our study may be related to differences in sample composition and/or follow-up.

We did not find evidence for a role of emotion dysregulation as a mechanism linking internalizing symptoms to subsequent relational victimization. Internalizing symptoms were associated cross-sectionally with emotion dysregulation, but they did not predict increases in emotion dysregulation over time. As such, emotion dysregulation could not serve as a mediator of the longitudinal association between internalizing symptoms and subsequent victimization. These findings point to the importance of identifying other mechanisms responsible for this association. One possible mechanism is social competence. Deficits in interpersonal skills and social competence are common among youths with internalizing symptoms (Rudolph, Hammen, & Burge, 1994; Spence, Donovan, & Brechman-Touissant, 1999). Moreover, youths with internalizing symptoms and few friends are more likely to be victimized by peers than children who have more friendship relationships (Hodges, Malone, & Perry, 1997). As such, social competence represents a potential mechanism linking internalizing symptoms to subsequent peer victimization, pointing to an important avenue for future inquiry.

Our findings suggest that the mechanisms linking victimization to the development of internalizing symptoms differ depending on whether victimization experiences are overt or relational in nature. We provide evidence for the role of emotion dysregulation as a mechanism underlying the association between relational and reputational victimization and subsequent internalizing symptoms, but mediators of the relationship between overt victimization and such symptoms remain unclear. Emotion regulation processes not measured in the current study may serve to explain this relationship. In particular, overt victimization experiences may be more likely to elicit fear than relational victimization. For example, individuals from stigmatized groups who confront discrimination and victimization experience hypervigilance and fear of future threat (Blascovich, Mendes, Hunter, & Lickel, 2000; Mays, Cochran, & Barnes, 2007). We did not include measures that specifically tapped fear reactivity or dysregulated fear expression in this study. As such, fear dysregulation may in fact play a role in the association between overt victimization and internalizing symptoms, a possibility that should be examined in future research.

Adolescents who are victimized by peers represent important targets for interventions aimed at preventing the negative mental health sequelae of victimization experiences. Our results have important implications for preventive interventions that seek to reduce the prevalence of psychopathology among youths confronting peer-related stressors. Most interventions targeting victimized youths have been designed as school-based prevention programs aimed at reducing the prevalence of relational and physical aggression and changing beliefs about the acceptability of aggressive behavior (Olweus, 1994; Van Schoiack-Edstrom, Frey, & Beland, 2002). Although school-based programs are important, even effective programs fail to eliminate peer aggression completely. Consequently, the development of effective preventive interventions for youths experiencing psychological distress related to peer victimization represents a critical goal for the field. Indeed, a recent group-based intervention demonstrated efficacy in improving peer acceptance, social self-efficacy, and self-esteem and in reducing social anxiety and depression among victimized and

bullied third graders over a 1-year period (DeRosier, 2004; DeRosier & Marcus, 2005). The intervention utilized cognitive-behavioral and social learning techniques to improve social skills, bolster prosocial attitudes and behaviors, and enhance coping skills for managing bullying and peer pressure. Empirical evaluation of the efficacy of such an intervention among adolescents represents an important avenue for future research.

The current findings suggest that techniques targeting emotion regulation skills should be an additional component of clinical interventions with victimized adolescents. We are unaware of preventive interventions targeting this population that include such techniques, pointing to the importance of drawing on emotion regulation techniques used in other psychosocial treatments to improve upon existing interventions. Dialectical behavior therapy includes a combination of cognitive-behavioral techniques and mindfulness and acceptance-based strategies, with a particular focus on building emotion regulation skills (Linehan, 1993). Dialectical behavior therapy has recently been demonstrated to reduce self-harm behaviors and depressive symptoms among adolescents engaging in repeated self-harm (James, Taylor, Winmill, & Alfoadari, 2007). Adolescent participants reported the emotion regulation skills training to be a particularly helpful component of the intervention. Another relevant intervention has been developed for youth depression that targets self-regulation of distress (Kovacs et al., 2006). Regulatory difficulties during periods of stress represent the primary intervention target. The therapy focuses on identifying children's typical responses to distressing situations, identifying the contexts that elicit maladaptive management of distress, and replacing habitual maladaptive responses to distress with alternative responses from the child's own repertoire of emotion regulation skills that ameliorate negative mood (Kovacs et al., 2006). Finally, a recent treatment specifically aimed at reducing engagement in rumination led to significant reductions in depression and associated comorbidity among adults (Watkins et al., 2007). None of these interventions specifically target adolescents experiencing peer victimization; however, they utilize a set of intervention techniques that could be incorporated into existing intervention protocols targeting victimized adolescents. It is likely that inclusion of techniques targeting emotion regulation specifically, in addition to social skills and self-efficacy, will have the greatest efficacy in reducing psychiatric morbidity among adolescents exposed to peer victimization.

This study had a number of important methodological strengths that expand upon the literature examining mechanisms linking peer victimization and adolescent psychopathology. In particular, the use of a longitudinal design allowed us to conduct a stringent test of mediation, and a large sample with substantial racial/ethnic diversity participated. However, limitations of the current study must be acknowledged. Significant attrition was present across the three assessment points, although participants who did not complete follow-up assessments did not differ from participants who remained in the study on any variable of primary interest. A second limitation is our use of self-reported symptomatology rather than *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; American Psychiatric Association, 1994) diagnoses. Although administration of a structured interview to establish diagnoses would represent a methodological improvement, the validity of the self-report measures used in this study is well-established (Timbre-

mont, Braet, & Dreessen, 2004; Wood, Piacentini, Bergman, McCracken, & Barrios, 2002).

Our use of self-report measures of emotion regulation also represents a limitation of the study because of the difficulties inherent in disentangling initial emotion activation from emotion regulation (Cole, Martin, & Dennis, 2004), which has led to increased use of psychophysiological measures to assess emotion and emotion regulation (Gross, 1998; Silk et al., 2007). Such measures are useful in experimental settings, but they are unfeasible for use with large community samples. The emotion regulation questionnaires used in the current study attempted to separate emotion activation from regulation by assessing the extent to which participants engaged in different regulation strategies once a specific emotion had already been activated. Other widely used measures of emotion regulation utilize a similar approach (Nolen-Hoeksema & Morrow, 1991).

A final limitation involves the use of a self-report assessment of peer victimization. Cognitive biases present in youths with depression and anxiety may have impacted the frequency of peer victimization reported by participants with higher levels of symptoms (De Los Reyes & Prinstein, 2004). We examined whether such biases were present by creating a dichotomous variable indicating whether peer victimization was present or absent at each assessment point. When we repeated the analyses using the dichotomous variables, our findings were unchanged, indicating that such biases did not likely impact the results. Nonetheless, shared-method variance remains a limitation, given that we also assessed symptoms of depression and anxiety using self-report. Future studies should aim to include teacher-report and/or peer-nomination methods for assessing peer victimization. Despite these limitations, self-report assessment can capture victimization experiences of which peers and teachers are unaware and remains the traditional method for assessing peer victimization in the literature (LaGreca & Harrison, 2005; Prinstein et al., 2001; Vernberg, 1990), given that the relationship between victimization and distress is not impacted by the use of peer- versus self-report measures of victimization (Crick & Bigbee, 1998).

In sum, the current study identified emotion dysregulation as a mechanism linking relational victimization to changes in internalizing symptoms among adolescents. Relational and reputational victimization led to increases in emotion dysregulation over time, and the emotion dysregulation generated by these victimization experiences accounted for the relationship between relational and reputational victimization experiences and internalizing symptoms. We found some evidence for a reciprocal relationship between internalizing symptoms and subsequent relational victimization, but this association was not accounted for by emotion dysregulation. These results suggest important avenues for intervention research targeting rejected and victimized youths.

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