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Emotion Regulation Attenuates the Prospective Links from Peer Victimization to Internalizing Symptoms during Middle Childhood

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\begin{abstract}
Objective: Peer victimization has been shown to be a robust predictor of depressive and anxiety symptoms over time. Relatively little is known, however, regarding what protective factors may attenuate these associations and render youth more resilient to this interpersonal stressor. Therefore, the current study examined sadness and worry regulation as moderators of the prospective links from peer victimization to internalizing symptoms over a 1-year period.

Method: Participants included 464 predominantly Caucasian children (54.7\% boys; ages 7–10), as well as their homeroom teachers, from an elementary school located in the Midwestern United States. Child and teacher reports of peer victimization and child reports of sadness and worry regulation were assessed at Time 1. Children also provided ratings of depressive and anxiety symptoms at Time 1, approximately 6 months later (Time 2), and again approximately 1 year later (Time 3). Moderating effects were evaluated using a series of multivariate latent growth curve models.

Results: Consistent with expectations, sadness regulation attenuated the prospective links from both child- and teacher-reported peer victimization to internalizing symptoms. Worry regulation also attenuated the prospective links from teacher-reported peer victimization to internalizing symptoms. The moderating effects of emotion regulation did not differ according to gender.

Conclusions: Findings suggest that the ability to effectively manage feelings of sadness and worry may serve as a buffer against the internalizing symptoms associated with peer victimization. Additional research is needed to determine whether interventions focused on enhancing victims’ emotion regulation skills reduce their subsequent risk for depressive and anxiety symptoms.
\end{abstract}

Peer victimization (i.e., the experience of being the target of peer aggression) confers risk for future depressive and anxiety symptoms among youth, and this vulnerability may persist for years after such experiences occur (McDougall & Vaillancourt, 2015). In fact, studies have shown that peer victimization during childhood and adolescence is associated with elevated rates of depression and anxiety disorder diagnoses during young adulthood (e.g., Copeland, Wolke, Angold, & Costello, 2013). Peer victimization may increase risk for subsequent internalizing symptoms by disrupting key cognitive-behavioral processes (e.g., increasing self-blaming attributions and social withdrawal; Rudolph, Troop-Gordon, Monti, & Miernicki, 2014; Schacter & Juvonen, 2015). However, factors that can buffer youth against these outcomes following experiences of victimization are less well understood.

One possible protective factor is emotion regulation, which refers to “the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one’s goals” (Thompson, 1994, pp. 27–28). Etiological models of depression (Hofmann, 2014) and anxiety (Cisler, Olatunji, Feldner, & Forsyth, 2010) emphasize the role of disrupted emotion regulation processes in the development and maintenance of symptoms. In contrast, adaptive emotion regulation strategies, such as those that effectively down-regulate negative emotions, may function as a protective factor in the face of environmental stressors (Campbell-Sills, Barlow, Brown, & Hofmann, 2006) and help to promote healthy psychosocial functioning (Cole & Hall, 2008). Thus, emotion regulation represents a potentially robust and malleable target for prevention and early intervention.

Previous research suggests that the emotions of sadness and worry are particularly relevant when considering
internalizing problems. That is, difficulties managing these negative emotions have been related to symptoms of depression and anxiety (e.g., Folk, Zeman, Poon, & Dallaire, 2014). Children and adolescents are likely to feel sad and/or worried following peer victimization (e.g., Morrow, Hubbard, Barhight, & Thomson, 2014), and it is possible that those who are better able to regulate these emotions may be less impacted by this interpersonal stressor.

Emerging evidence has demonstrated that emotion regulation plays a key role in youth’s experiences of peer victimization. Specifically, emotion regulation deficits have been shown to increase risk for peer victimization (e.g., Rosen, Milich, & Harris, 2012) and serve as a mechanism linking peer victimization to subsequent internalizing symptoms (McLaughlin, Hatzenbuehler, & Hilt, 2009). Recent findings also suggest that expressing emotion may reduce risk for depressive symptoms, suppressing emotion may reduce risk for anxiety symptoms, and cognitive reappraisal may increase risk for anxiety symptoms among boys who have experienced peer victimization (McClain, Younginer, & Elledge, 2019). Most relevant to the current study, other work has revealed that anger regulation attenuates the longitudinal associations between peer victimization and physical aggression among elementary school-age children (Cooley & Fite, 2016) as well as overall aggression among middle school-age adolescents (Kaynak, Lepore, Kliewer, & Jaggi, 2015). To our knowledge, however, research has yet to examine whether youth’s ability to effectively manage discrete emotions may reduce their subsequent risk for internalizing symptoms when they are exposed to peer victimization.

The current study aimed to extend this literature by evaluating sadness and worry regulation as moderators of the prospective links from peer victimization to depressive and anxiety symptoms over a 1-year interval during middle childhood (i.e., ages 7–10). This developmental period represents an ideal window in which to identify protective factors for several reasons. First, previous research has shown that a majority of children report at least one incident of peer victimization in elementary school (e.g., Cooley, Fite, & Pederson, 2018). Second, although trajectories of depressive and anxiety symptoms tend to decrease during this time before evidencing a sharp increase at age 12 (Cohen, Andrews, Davis, & Rudolph, 2018), youth who experience peer victimization may exhibit patterns of internalizing symptoms that remain stable or increase at an earlier age (e.g., Whalen et al., 2016). Third, anxiety concerns represent the most common psychological disorders in this age group (Merikangas et al., 2010) and may predict subsequent depression (Price et al., 2016). Therefore, identifying protective factors that can be directly targeted during middle childhood may help to curtail the precipitous increase in internalizing symptoms as youth enter adolescence. The functionalist perspective suggests that discrete emotions serve distinct functions within social contexts (Campos, Campos, & Barrett, 1989). Thus, we examined sadness and worry regulation independently rather than emotion regulation more broadly. Due to the limited nature of the extant literature, however, we did not make specific predictions regarding whether patterns of moderation would differ according to these discrete emotions. Rather, based on available theory and evidence, we hypothesized that sadness and worry regulation would attenuate the prospective links from peer victimization to depressive and anxiety symptoms over time. Potential gender differences in the moderating effects of emotion regulation were also explored.

**Method**

**Participants**

Participants included 464 predominantly Caucasian children (54.7% boys) between the ages of 7 and 10 (M = 8.64, SD = 0.69), as well as their homeroom teachers, from an elementary school located in a rural Midwestern community in the United States. All third and fourth grade students not receiving special education services that required placement outside of the mainstream classroom were recruited annually from Fall 2015 to Fall 2017. Overall, 97% of caregivers completed the consent form (n = 556), and permission was obtained for 87% of students to participate in the study (n = 499). Children were also asked to provide verbal assent prior to each data collection. At Time 1, data were missing for 35 children who either declined assent or did not complete the independent variable measures; accordingly, they were excluded from subsequent analyses, resulting in the final sample of 464 children. Caregivers were asked to provide informed consent again during the fall semester of the subsequent school year (i.e., prior to Time 3 data collection). Seventy-two percent of the final sample (n = 334) participated in data collection at all three time points. Homeroom teachers were recruited annually, with 94% providing informed consent (N = 17; 88% female).

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1Note, however, that anger and sadness regulation were found to exacerbate the prospective association between peer victimization and relational aggression (Cooley & Fite, 2016).
Individual socioeconomic data were not available in the current study, but school records indicated that less than 10% of the student body identified as a racial or ethnic minority, and approximately 40% of all students at the school were eligible for free or reduced-price lunch.

**Measures**

**Peer Victimization**
Child reports of peer victimization were assessed at Time 1 using a modified version of the Victimization of Self (VS) subscale from the Peer Experiences Questionnaire (Dill, Vernberg, Fonagy, Twemlow, & Gamm, 2004). This measure consists of nine items (e.g., “A kid hit, kicked, or pushed me in a mean way”) that are rated on a 5-point scale. Teacher reports of peer victimization were assessed using a modified version of the Social Experience Questionnaire – Teacher Report (Cullerton-Sen & Crick, 2005), which consists of six items (e.g., “Gets hit, kicked, punched by others”) that are rated on a 5-point scale. Children and teachers were asked to report on the frequency of each occurrence of peer victimization since the beginning of the school year. Separate scores were created for child and teacher reports by averaging across the nine items and six items, respectively, with higher scores indicating more frequent experiences of peer victimization. Both the VS subscale (ω = .87) and the SEQ-T (ω = .78) demonstrated adequate reliability in the current study.

**Emotion Regulation**
Child reports of emotion regulation were assessed at Time 1 using the Coping subscales from the Children’s Emotion Management Scales (CEMS) for Sadness and Worry (Zeman, Cassano, Suveg, & Shipman, 2010; Zeman, Shipman, & Penza-Clyve, 2001). The Sadness Coping subscale consists of five items (e.g., “When I’m sad, I do something totally different until I calm down”) and the Worry Coping consists of three items (e.g., “I try to calmly settle the problem when I feel worried”) that are rated on a 3-point scale. Items for each subscale were averaged, with higher scores indicating more effective sadness and worry regulation. The Sadness Coping subscale (ω = .73) demonstrated adequate reliability, and the Worry Coping subscale (ω = .60) demonstrated modest reliability in the current study.

**Depressive Symptoms**
Child reports of depressive symptoms were assessed at Times 1–3 using the Short Mood and Feelings Questionnaire (SMFQ; Angold et al., 1995). This measure consists of 13 items (e.g., “I felt miserable or unhappy”) that are rated on a 3-point scale. Items were averaged, with higher scores indicating more severe depressive symptoms. The SMFQ demonstrated good reliability across all time points in the current study (ωs = .87, .89, .91).

**Anxiety Symptoms**
Child reports of anxiety symptoms were assessed at Times 1–3 using the Patient-Reported Outcomes Measurement Information System (PROMIS) Pediatric Short Form-Anxiety v2.0 (Irwin et al., 2010). This measure consists of eight items (e.g., “I felt like something awful might happen”) that are rated on a 5-point scale. Items were averaged, with higher scores indicating more severe anxiety symptoms. The PROMIS Pediatric Short Form-Anxiety v2.0 demonstrated good reliability across all time points in the current study (ωs = .90, .90, .91).

**Procedure**
All procedures were approved by school administrators and by the researchers’ Institutional Review Board. Child reports were collected via group administration approximately 12 weeks after the start of the fall semester (Time 1), 6 months later during the spring semester (Time 2), and then again 1 year later during the subsequent school year (Time 3). Teachers completed a secure online survey at Time 1 for each student in their home-room during the same month in which child data collection occurred. Children received a small prize for their participation at each time point, and teachers were compensated $60–65 for their participation at Time 1.

**Analytic Method**
A series of multivariate latent growth curve (LGC) models were estimated within Mplus (Version 7.4; Muthén & Muthén, 1998–2015) using a hierarchical approach. Note that separate models were estimated for child and teacher reports of peer victimization. Full-information maximum likelihood estimation was used to accommodate missing outcomes at Times 1 (0.4%), 2 (7.1%) and 3 (25.0%). All continuous predictors were standardized prior to analyses to aid in the interpretation of effects. Gender and grade level were included as covariates and centered such that boys and third-grade students served as the model reference. Time in 0.5-year intervals was centered such that the latent intercepts corresponded to Time 1. To test for moderation, peer victimization x sadness regulation and peer victimization x worry regulation product terms were added separately to the model. Next, three-way product terms (e.g., peer victimization x sadness regulation...
x gender), along with the embedded lower-order interactions (e.g., peer victimization x gender, sadness regulation x gender), were added separately to the model in order to evaluate potential gender differences in the moderating effects of sadness and worry regulation. All significant interactions were interpreted by calculating the regions of significance for their simple effects (Bauer & Curran, 2005).

Results

Preliminary Analyses

Descriptive statistics and correlations among study variables are presented in Table 1. Initial inspection of the outcome variables revealed that their skewness and kurtosis fell below 2 and 3, respectively. At Time 1, 75% of children reported having experienced at least one incident of peer victimization since the beginning of the school year; teachers reported that 18% of children had been victimized by peers on at least one occasion. Grade level was included as a covariate only for anxiety symptoms given the significant association observed at Time 3. An independent samples t-test also showed that male teachers (M = 1.32, SD = 0.54) reported higher rates of peer victimization among their students than female teachers (M = 1.11, SD = 0.32), t(37.08) = 2.46, p = .02. Thus, teacher gender was included as a covariate in the models utilizing teacher reports of peer victimization.

Unconditional LGC Models

A random linear time LGC model provided the best fit to the data for depressive symptoms, whereas a random intercept, fixed linear time LGC model provided the best fit to the data for anxiety symptoms (see Table S1). Although there was no significant change in depressive symptoms over time on average (slope = −0.03), there was significant interindividual variability in children’s trajectories. In contrast, children exhibited significant decreases in anxiety symptoms over time (slope = −0.15), with negligible variability in rates of change.

Multivariate LGC Models

The initial multivariate LGC model provided an acceptable to close fit to the data, χ2(9) = 27.91, p = .001; RMSEA = .07; CFI = .98; SRMR = 0.04 (see Figure 1).

Child-Reported Peer Victimization Models

The main effects model is reported in Table S2. When two-way interactions were added to the model, sadness regulation significantly moderated the prospective links from peer victimization to both depressive symptoms and anxiety symptoms (see Table S3). As shown in Figure 2a, peer victimization predicted greater decreases in depressive symptoms over time for sadness regulation ≥ −0.97 SD (upper bound), but the lower bound fell beyond the limits of the data. Similarly, as shown in Figure 2b, peer victimization predicted greater decreases in anxiety symptoms over time for sadness regulation ≥ −0.68 SD (upper bound), but the lower bound fell beyond the limits of the data. Worry regulation did not, however, significantly interact with peer victimization to influence trajectories of depressive or anxiety symptoms (see Table S4). No significant three-way gender interactions emerged (ps > .29).

Table 1. Descriptive statistics and correlations among study variables.

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<td>−</td>
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<td>−</td>
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<td>29%</td>
<td>23%</td>
<td>18%</td>
<td>16%</td>
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</table>

Gender (0 = Boys, 1 = Girls); Grade (0 = Third Grade, 1 = Fourth Grade); CR = Child-Reported; TR = Teacher-Reported; T1 = Time 1 (Baseline); T2 = Time 2 (6-month follow-up); T3 = Time 3 (1-year follow-up); N = 464 (TR Peer Victimization: n = 460; T1 Depressive Symptoms: n = 463; T2 Depressive Symptoms: n = 442; T3 Depressive Symptoms: n = 358; T1 Anxiety Symptoms: n = 462; T2 Anxiety Symptoms: n = 442; T3 Anxiety Symptoms: n = 358); Bold estimates represent statistically significant correlations (p < .05).

2To further investigate potential differences in teachers’ ratings, peer victimization was regressed on child gender, teacher gender, and the interaction between these two variables; however, this interaction was not significant, B = .19, SE = .12, p = .26.
Teacher-Reported Peer Victimization Models

The main effects model is reported in Table S5. When two-way interactions were added to the model, sadness regulation significantly moderated the prospective link from peer victimization to anxiety symptoms, but not depressive symptoms (see Table S6). As shown in Figure 3, peer victimization predicted lesser decreases in anxiety symptoms for sadness regulation ≤ –1.74 SD (lower bound), but the upper bound fell beyond the limits of the data. Moreover, worry regulation significantly moderated the prospective links from peer victimization to both depressive symptoms and anxiety symptoms (see Table S7). As shown in Figure 4a, peer victimization predicted greater decreases in depressive symptoms over time for worry regulation ≥ +2.59 SD (upper bound), but the lower bound fell beyond the limits of the data. As shown in Figure 4b, the highest initial levels of anxiety symptoms were observed when levels of both peer victimization and worry regulation were high. However, peer victimization predicted greater decreases in anxiety symptoms for sadness regulation ≥ +1.00 SD (upper bound) and lesser decreases in anxiety symptoms for sadness regulation ≤ –0.63 SD (lower bound). No significant three-way gender interactions emerged (ps > .23).

Discussion

The current study examined whether the longitudinal associations between peer victimization and internalizing symptoms would differ according to children’s ability to effectively regulate their emotions. Consistent with expectations, both sadness and worry regulation attenuated the prospective links from peer victimization to internalizing symptoms. That is, the ability to effectively manage sadness exhibited a protective buffering effect, with child-reported peer victimization predicting greater decreases in depressive and anxiety symptoms over time at higher levels of sadness regulation. The ability to effectively manage worry was also protective, such that teacher-reported peer victimization was associated with greater decreases in depressive and anxiety symptoms over time at higher levels of worry regulation. Conversely, teacher-reported peer victimization was associated with more stable patterns of anxiety symptoms over time at lower levels of sadness and worry regulation. There were no significant gender differences in the moderating effects of emotion regulation. These findings build on previous research (Cooley & Fite, 2016; Kaynak et al., 2015) and provide additional evidence that the effective regulation of discrete emotions may serve as a buffer against certain forms of maladjustment when children are victimized by peers.
Interestingly, teacher-reported peer victimization was associated with higher initial levels of anxiety symptoms at higher levels of worry regulation. These findings warrant additional investigation, but it may be that frequent experiences of this interpersonal stressor overwhelm children’s coping resources in the short term, thereby resulting in greater symptomatology. Nonetheless, the ability to effectively regulate worry appears to function as a protective factor over time for children who experience high initial levels of peer victimization.

Figure 2. (a-b) Moderating effects of sadness regulation on the prospective links from child-reported peer victimization to depressive and anxiety symptoms.

For boundaries of significance that fell beyond the limits of the data, traditionally identified levels (+1 SD) of the moderator are presented instead for comparison purposes.
Strengths of the current study include the use of multiple informants of peer victimization and its short-term longitudinal design. However, several methodological limitations should be acknowledged. First, findings related to worry regulation should be interpreted more cautiously given the variable’s lower reliability; this can likely be attributed to the small number of items on the subscale (Kline, 2000), but it may have attenuated observed associations and moderating effects. A second limitation involves the current study’s reliance on child reports of emotion regulation; Compas et al. (2017) have highlighted the need for a multi-informant approach to research on this construct, and future work would benefit from utilizing parent and/or teacher ratings of children’s ability to effectively manage their emotions. Further, it would be informative to examine the regulation of other discrete emotions, including fear and embarrassment, that may be elicited during incidents of peer victimization (Kochenderfer-Ladd, 2004). Peer reports may also provide additive and unique information on experiences of victimization of which teachers are unaware (Ladd & Kochenderfer-Ladd, 2002). Third, although rural populations comprise a substantial proportion of the United States as well as countries throughout the world, the current sample lacked racial and ethnic diversity, which may limit generalizability of its findings. Finally, peer victimization and emotion regulation were only examined at Time 1, and children’s transition into new classrooms between Time 2 and Time 3 may have impacted their levels of internalizing symptoms. A direction for future research would be to examine bidirectional associations among these variables across longer intervals, especially during the transition into adolescence, when youth may be particularly at risk for symptoms of depression and anxiety.

Despite these limitations, the current study may have implications for interventions. A growing body of evidence has demonstrated that emotion regulation plays a central role in youth’s experiences of peer victimization and serves as a transdiagnostic factor in the development of internalizing and externalizing psychopathology (see Aldao, Gee, De Los Reyes, & Seager, 2016). The present findings suggest that the ability to effectively manage feelings of sadness and worry may serve as a buffer against the internalizing symptoms associated with peer victimization. Additional research is needed to determine whether interventions focused on enhancing victims’ emotion regulation skills reduce their subsequent risk for depressive and anxiety symptoms. Of note, middle childhood may be a particularly important developmental period in which to target this protective factor in order to curtail the precipitous increase in internalizing symptoms as youth enter adolescence. Group-based cognitive behavioral interventions delivered within school settings, which include a focus on

Figure 3. Moderating effect of sadness regulation on the prospective link from teacher-reported peer victimization to anxiety symptoms.
For boundaries of significance that fell beyond the limits of the data, traditionally identified levels (+1 SD) of the moderator are presented instead for comparison purposes.
emotion regulation, represent one promising approach for youth experiencing high levels of peer victimization that may lead to reductions in internalizing symptoms over time (e.g., Fite, Cooley, Poquiz, & Williford, 2019; Fung, 2018). Of course, such preventive interventions would ideally be implemented in tandem with school-
wide programs designed to reduce the prevalence of peer victimization and help adults better recognize and respond to incidents of aggression when they occur (for a review, see Ttofi & Farrington, 2011).

Disclosure statement

The authors declare that they have no conflict of interest.

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