



Rumination about social stress mediates the association between peer victimization and depressive symptoms during middle childhood



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ABSTRACT

Although prior research has established a link between exposure to peer victimization and depressive symptoms, relatively little is known about the processes underlying this association. This study examined whether maladaptive responses to a novel social stressor – specifically, lower levels of problem solving or higher levels of rumination – mediate this association. Data were gathered from 130 children (64 boys, 66 girls; M age = 9.46, SD = 0.33) who participated in a laboratory social stressor task with an unfamiliar peer. Results indicated that prior exposure to peer victimization in the school context was associated with ruminative responses to the novel stressor, which mediated the association between victimization and depressive symptoms. These results indicate that ruminative responses to social stress outside of the victimization context may serve as one process explaining the association between victimization and heightened depressive symptoms.

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Peer victimization is a common stressor, with approximately 10–20% of youth experiencing consistent victimization during the school years (Ladd & Kochenderfer-Ladd, 2002; Graham & Juvonen, 1998). Both overt¹ (e.g., hitting, verbally insulting, threatening) and relational (e.g., social exclusion, manipulation) victimization are associated with depressive symptoms (Hodges & Perry, 1999; Rudolph, Troop-Gordon, Hessel, & Schmidt, 2011). Indeed, a meta-analysis of concurrent studies (Hawker & Boulton, 2000) revealed a significant association between victimization and depressive symptoms, and a meta-analysis of longitudinal studies implicated victimization as an antecedent of depressive symptoms (Reijntjes, Kamphuis, Prinzie, & Telch, 2010). Unfortunately, relatively little research has examined the processes through which victimization leads to depressive symptoms, making it hard to determine specific targets for intervention. This study examined whether responses to social stress (i.e., problem solving and rumination) help to explain this association. Specifically, we assessed stress responses during an in vivo social stressor task with an unfamiliar peer (i.e., another

study participant), providing the opportunity to investigate whether prior victimization in the school context predicts stress responses in novel social situations.

1. Peer victimization and responses to stress

We focused on two responses to social stress: (a) problem solving, conceptualized as direct efforts to ameliorate stressors (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001); and (b) rumination, conceptualized as a repetitive focus on negative thoughts and emotions about a stressor (Broderick, 1998). We anticipated that exposure to peer victimization would interfere with adaptive responses to stress (i.e., problem solving) and heighten maladaptive responses to stress (i.e., rumination). Revisions of the Social Information Processing model (Crick & Dodge, 1996) suggest that both past experience and emotionality play a role in assessing threatening situations, such as encountering conflict with an unfamiliar peer. Frequent exposure to peer victimization may undermine children's social self-efficacy, leading them to withdraw from subsequent stressful social situations rather than engaging in active problem-solving efforts. Victimization also may serve as a catalyst for maladaptive emotional and cognitive responses to future social interactions. Indeed, victimization is associated with negative emotions (e.g., fear, anger) and self-blame (Graham & Juvonen, 1998; Kochenderfer-Ladd, 2004; Prinstein, Cheah, & Guyer, 2005; Rudolph, Troop-Gordon, & Flynn, 2009), as well as hostile attributions (Hoglund & Leadbeater, 2007; Taylor, Sullivan, & Kliewer, 2013). Emotional arousal, self-blame, and attention to threat may foster dysregulated stress processing, such as rumination.

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¹ There has been a call for research to use the term "physical victimization" rather than "overt victimization." This call stems from awareness that relational victimization can also be overt in nature and that physical and verbal victimization, which are both components of overt victimization, may be distinct (e.g., Ostrov & Kamper, 2015). We use the terms "relational victimization" and "overt victimization" in this study because our measure of victimization includes items assessing relational victimization, physical victimization, and verbal insults and threats.

Supporting a link between victimization and compromised problem solving, self-reports of dysregulated mood in response to a hypothetical victimization scenario are associated with less self-reported conflict resolution (Kochenderfer-Ladd, 2004). Supporting a link between victimization and rumination, cyber-victimization prospectively predicts depressive rumination (rumination about the causes and consequences of sad mood; Feinstein, Bhatia, & Davila, 2014). Research also links victimization exposure with a tendency to ruminate specifically about victimization experiences (Mathieson, Klimes-Dougan, & Crick, 2014). More broadly, victimization predicts diminished effortful engagement (including problem solving) and heightened involuntary engagement (including rumination) over time (Troop-Gordon, Rudolph, Sugimura, & Little, 2015). This study extends prior research by examining whether prior exposure to victimization at school predicts stress responses within an unfamiliar social context, thereby providing insight into the generalized and potentially enduring negative consequences of victimization.

2. Responses to stress and depressive symptoms

In turn, children's maladaptive responses to social challenges may confer risk for depressive symptoms. Indeed, research supports the idea that compromised problem solving and heightened rumination are associated with depressive symptoms. Compared to nondepressed children, depressed children are more likely to engage in ineffective problem-solving strategies (e.g., aggression) and less likely to engage in prosocial strategies (e.g., means-end problem solving) in response to stress (Garber, Quiggle, Panak, & Dodge, 1991). Concurrent and prospective studies of rumination reveal that depressive rumination predicts higher levels of depressive symptoms in youth (Abela, Brozina, & Haigh, 2002; Jose & Brown, 2008; for a meta-analysis, see Rood, Roelofs, Bögels, Nolen-Hoeksema, & Schouten, 2009). Research in adults also links depressive rumination following stress to depressive symptoms (Michl, McLaughlin, Shepherd, & Nolen-Hoeksema, 2013; Nolen-Hoeksema & Morrow, 1991). More broadly, lower levels of effortful engagement (e.g., problem solving) and higher levels of involuntary engagement (e.g., rumination) responses to peer stress predict youth depressive symptoms over time (Agoston & Rudolph, 2011; Flynn & Rudolph, 2011; Osowiecki & Compas, 1999; Troop-Gordon et al., 2015).

3. Responses to stress as a mediator of the association between victimization and depressive symptoms

The primary goal of this study was to examine whether maladaptive stress responses account for the link between victimization and depressive symptoms. We hypothesized that prior exposure to victimization at school would be associated with less problem solving and more rumination in the context of a novel social stressor, which would account for the association between victimization and depressive symptoms. Although minimal research has directly investigated these ideas, there is some evidence that responses to stress mediate the victimization-depressive symptoms link. Two studies found that depressive rumination (or a composite including depressive rumination) accounts for the association between victimization and depressive symptoms (Feinstein et al., 2014; McLaughlin, Hatzenbuehler, & Hilt, 2009). In another study, rumination about past relational victimization partially accounted for the association between victimization and depressive symptoms (Mathieson et al., 2014). Finally, a recent study revealed that general maladaptive responses to stress (lower effortful engagement and higher involuntary responses) help to explain why victimization prospectively predicts depressive symptoms (Troop-Gordon et al., 2015).

Despite this preliminary evidence, research has not examined whether responses to peer stress in novel social contexts contribute to the link between victimization and depressive symptoms. We anticipated that exposure to victimization at school would have a generalized effect on children's ability to negotiate social stressors with peers. Because

generalization of maladaptive stress responses across social settings may create a particularly high level of risk, it is important to better understand how past victimization experiences predict stress responses within novel social contexts.

4. Study overview

To address this goal, this study examined children's responses to an in vivo laboratory social stressor. This approach provides several advantages over prior research. First, it allows the examination of how prior exposure to victimization is associated with responses to a standardized naturalistic social stressor, ensuring that responses to stress are assessed in a similar context across children. Second, assessing on-line responses to stress overcomes limitations of retrospective reports used in previous studies, which may suffer from reporting biases and may not adequately reflect responses during heightened emotional arousal (Silk, Steinberg, & Morris, 2003). Third, children were paired with unfamiliar peers (i.e., other study participants), allowing us to circumvent established social biases. In sum, this study used an ecologically valid social challenge to examine (1) how exposure to victimization in the school context predicts in vivo responses to a novel social stressor, and (2) whether these responses account for the association between prior exposure to victimization in the school context and general levels of depressive symptoms. In particular, we examined whether lower levels of problem solving and higher levels of ruminative responses to stress accounted for the victimization-depressive symptoms link.

We also examined potential gender differences in these pathways. With regard to the first pathway, victimization may be more strongly associated with maladaptive responses to stress in girls than in boys. Girls endorse more social connection goals than boys (Rose & Rudolph, 2006), which may heighten emotional arousal in response to victimization, fostering less problem solving and more rumination. Indeed, girls are more likely than boys to ruminate in response to stress (Broderick, 1998). With regard to the second pathway, maladaptive responses to peer stress may be more strongly associated with depressive symptoms in girls than in boys. Because girls value close relationships more than boys (Rose & Rudolph, 2006), the disruptive effects of maladaptive stress responses on peer relationships may be amplified. Supporting this idea, ineffective responses to peer stress predict depressive symptoms more strongly in girls than in boys (Agoston & Rudolph, 2011).

To provide a conservative test of our hypotheses, we also considered covariates that could account for the link between victimization, responses to stress, and depressive symptoms. Because gender, socioeconomic class, and ethnicity often are associated with victimization and/or depressive symptoms (Due et al., 2009; Paquette & Underwood, 1999; Piccinelli & Wilkinson, 2000; Seals & Young, 2003), our primary analyses adjusted for these demographic variables. We also conducted a supplemental set of analyses that considered the quality of the dyadic interaction during the in vivo social stressor, which could contribute to children's stress responses.²

5. Method

5.1. Participants

Participants were 130 children³ (66 girls, 64 boys; *M* age = 9.46, *SD* = 0.33; 71% White, 13.6% African American, 8.3% Asian, 6.1% other; annual income 17.7% \$0–\$29,999, 27.7% \$30,000–\$59,999, 23.0%

² Due to equipment failure, dyad quality data were available for only a subset of participants (*n* = 122). Thus, these analyses were conducted to supplement the primary analyses with the full sample.

³ One participant was missing data on victimization and depressive symptoms and therefore was not included in analyses using individual level variables. However, because this participant's behavior was coded and incorporated into the dyadic negativity score used in the supplemental analyses, the full sample included 130 participants.

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