

RUMINATION ABOUT A NOVEL SOCIAL STRESSOR MEDIATES THE ASSOCIATION  
BETWEEN VICTIMIZATION AND DEPRESSIVE SYMPTOMS

BY

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THESIS

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### **Abstract**

Although research has established the link between peer victimization and depression, little research has demonstrated what accounts for this association or how peer victimization may be detrimental to new peer relationships. The current research examined whether responses to stress – less problem solving or more rumination – account for the association between victimization and depression. 132 children ( $M$  age = 9.46,  $SD$  = .33; 66 boys, 66 girls) participated in a laboratory social stress task with an unfamiliar peer. Results indicated that rumination in response to the social stress task with a new peer accounted for the link between prior victimization and depressive symptoms. These results indicate that detrimental responses to stress such as rumination may not be limited to the victimization context, and that responses to stress in new social situations are associated with depressive symptoms.

Keywords: peer victimization, depression, problem solving, rumination

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## Introduction

Although victimization is a common occurrence for school children with approximately 10-20% of children being repeatedly victimized by their peers (Graham & Juvonen, 1998), the potential consequences of victimization are not normative. Both overt victimization (e.g., hitting, insulting) and relational victimization (e.g. exclusion) are associated with subsequent depression (Rudolph, Troop-Gordon, Hessel, & Schmidt, 2011). A meta-analysis of concurrent studies (Hawker & Boulton, 2000) found that victims tend to be more depressed than non-victims, and victims are more likely to suffer from depression than other internalizing disorders such as anxiety. Furthermore, a meta-analysis of longitudinal studies found depression is a consequence of victimization (Reijntjes, Kamphuis, Prinzie, & Telch, 2010). Despite these findings, little research has examined the processes through which victimization leads to depression.

In order to understand this pathway, it is necessary to consider how victimization may alter children's thoughts and feelings in ways that affect children's social interactions and emotional well-being. Exposure to victimization may impact children's sense of self in relation to others. Children may self-blame by attributing victimization to their own personality or behavior (Juvonen & Graham, 2001). In turn, this may undermine their social efficacy, thereby compromising their ability to respond effectively to future social stress. In particular, we hypothesized that exposure to victimization may cause children to engage in (a) fewer problem solving responses to stress, as reflected in effortful engagement with a stressor in an effort to ameliorate the situation (Compas, Connor-Smith, Saltzman, Thomsen & Wadsworth, 2001); and (b) more ruminative responses to stress, as reflected in a tendency to focus repetitively on negative events (Holman & Silver, 1998; Nolen-Hoeksema, 1991). The goal of the present study was therefore to examine whether fewer problem-solving responses and more ruminative

responses to social stress mediate the association between victimization and depression in children. Importantly, this question was examined in the context of an *in vivo* stress task with a peer with whom participants had no prior social contact, thus allowing researchers to examine how victimization is associated with responses to new social challenges.

### **Peer Victimization as a Predictor of Responses to Stress**

Exposure to severe or chronic victimization may undermine youth's ability to engage in effective problem solving. Experiencing peer victimization may lead children to feel socially inadequate or unskilled. They may thus become tentative about engaging in peer interactions, leading them to withdraw from challenging or stressful social situations rather than engaging in active problem solving efforts. In addition to undermining problem solving responses, victimization experiences may also promote ruminative responses to social stress. First, victimization may be a catalyst that causes children to have more negative emotions and defeated cognitive patterns in future social interactions. Indeed, victimization is related to more negative emotional responses (e.g. fear, anger) and self-blaming attributions (Graham & Juvonen, 1998; Kochenderfer-Ladd, 2004; Prinstein, Cheah, & Guyer, 2005; Taylor et al., 2012). Second, victimization may also increase youth's perceptions of social threat. Victimization is associated with more hostile attributional biases (Hoglund & Leadbeater, 2007; Taylor, Sullivan, & Kliewer, 2012), which may heighten vigilance during peer interactions. Emotional arousal, self-blaming, and attention to threat may foster the uncontrolled cognitions and emotions characteristic of rumination.

Supporting the hypothesized link between victimization and compromised problem solving, reports of dysregulated mood (e.g. anger) in response to a hypothetical victimization scenario were associated with less self-reported conflict resolution. (Kochenderfer-Ladd, 2004).

Other research indicates that victimization is associated with lower levels of effortful engagement, such as actively engaging with social conflict (Troop-Gordon, Rudolph, Sugimura, & Little, 2014). Studies support the link between victimization and rumination using measures of depressive rumination (i.e., rumination about sadness or depression; Barchia & Bussey, 2010). Cyber-victimization is associated with subsequent depressive rumination (Feinstein et al., 2014), and peer victimization is associated with a composite of emotion dysregulation that included depressive rumination (McLaughlin, Hatzenbuehler & Hilt, 2009). Other studies support the link between victimization and rumination using measures of rumination in response to victimization. Victimization is associated with higher levels of involuntary engagement responses to victimization (e.g., rumination, cognitive interference; Troop-Gordon, Rudolph, Sugimura, & Little, 2014) and more rumination about victimization (Mathieson, Klimes-Dougan, & Crick, 2014). Extending prior research examining how victimization is associated with depressive rumination and rumination in response to past victimization, the current study examined how victimization might also be related to responses to social stress within a novel social context. Understanding victimized youth's responses to novel social situations may provide insight into one explanatory mechanism underlying the association between victimization and depressive symptoms.

### **Responses to Stress as Predictors of Depression**

In turn, maladaptive responses to stress are associated with depression. Poor problem solving may make it difficult to navigate social conflict. When youth do not use problem solving to resolve social strain, stressors may remain unresolved leading youth to perceive peer stress as uncontrollable, contributing to depression. Infrequent use of problem solving might also make a child's peers view their reactions unfavorably or as socially inept. This in turn may lead to social

isolation, which is commonly associated with depression. Likewise, rumination may exacerbate negative cognitions and emotions, leading to depression.

Evidence supports the idea that lower levels of problem solving are associated with depression. In one study, a group of depressed adults was less likely to report planned or effective problem solving than non-depressed adults (Nezu, 1986), and adults who were ineffective at problem solving were more likely to be depressed than more effective problem solvers (Nezu & Ronan, 1988). A great deal of research also supports the pathway from rumination to depression. In a prospective study of children, Broderick and Korteland (2004) found rumination was associated with greater subsequent depressive symptoms. Researchers also have linked depressive rumination (Nolen-Hoeksema, Wisco & Lyubromirsky, 2008) and depressive rumination following stress (Michl, McLaughlin, Shepherd, & Nolen-Hoeksema; Nolen-Hoeksema & Morrow, 1991) to depression in adults. Moreover, there is evidence that dysphoric individuals have poorer problem solving strategies when they are ruminating (Lyubomirsky & Nolen-Hoskema, 1995). More broadly, maladaptive responses to peer stress that include both low levels of problem solving and high levels of rumination predict youth depression over time (Flynn & Rudolph, 2011; Troop-Gordon et al., 2014).

### **Responses to Stress as a Potential Mediator of the Association between Victimization and Depression**

The major goal of this study was to examine whether responses to stress act as mediators between peer victimization and depressive symptoms. Specifically, it was hypothesized that victimization would be associated with (a) less problem solving and (b) more rumination, which would be linked to more depressive symptoms. Although minimal research has investigated these ideas, there is some evidence for the role of responses to stress as a mediator of the



victimization-depression link. Two studies found that depressive rumination accounts for the relationship between victimization and depression (Feinstein, Bhatia, & Davila, 2014; McLaughlin et al., 2009). Another study suggested children's self-reported rumination about past experiences of relational victimization partially accounts for the association between victimization and depression, but this study did not examine overt victimization (Mathieson, Klimes-Dougan, & Crick, 2014). Despite this preliminary evidence, it has not yet been examined whether problem solving and rumination in response to novel peer stress account for the link between victimization and depressive symptoms. Prior victimization may undermine social efficacy and sabotage new peer relationships, making it more challenging to negotiate a social stressor with a novel peer. A strength of the present investigation is that it elucidates how victimization may impair responses to stress in novel peer interactions.

### **Study Overview**

Specifically, this study examined responses to stress in the context of an *in vivo* laboratory social stressor. A laboratory task is ideal because it allows the examination of how victimization is related to responses to a naturalistic social stressor that is standardized across all children. Indeed, although other studies have examined rumination in response to victimization, not all children experience the same rate of victimization, and children who have not had any victimization experiences may not have had an opportunity that warrants rumination. A laboratory task also allows participants to be paired with an unfamiliar peer, which prevents any biases a participant may have of their partner, and vice versa. Therefore, the current study examined how prior victimization is associated with social interactions with a new peer, addressing two key questions: (1) Does less problem solving explain the association between

victimization and depressive symptoms, and (2) Does more rumination explain the association between victimization and depressive symptoms?

We also examined potential sex differences in both the link from victimization to responses to stress and responses to stress to depressive symptoms. First, victimization may lead to more maladaptive responses to stress in females. Females endorse more social goals than boys (Rose & Rudolph, 2006); this higher emphasis on social relationships might make females more likely than males to become emotionally aroused in response to victimization, leading to more rumination or less problem solving. Indeed, evidence indicates females are more likely than males to ruminate in response to life stress (Garnefski, Teerds, Kraaij, Legerstee, & van den Kommer, 2004). Second, maladaptive responses to stress may lead to more depression in females than males. Engaging in less problem solving and more rumination in response to peer stressors might be especially likely to lead to depression in girls because girls value close relationships more than boys (Rose & Rudolph, 2006) and thus may find unresolved peer stress more distressing. Indeed, ineffective responses to stress are predict depression more strongly in girls compared to boys (Agoston & Rudolph, 2011).

To provide a conservative test of our hypotheses, we also considered potential covariates that might account for the link between victimization, responses to stress, and depression. First, because differences in the dyadic-level quality of the interactions could affect children's stress responses, analyses adjusted for observer-coded dyad negativity. Second, because sex, socioeconomic class, and ethnicity often are associated with victimization and depression (Due et al., 2009; Paquette & Underwood, 1999; Piccinelli & Wilkinson, 2000; Seals & Young, 2002), analyses adjusted for these demographic variables. Third, because individual differences in children's temperament could contribute to exposure to victimization as well as to responses to

stress and depression, we conducted a supplemental set of analyses adjusting for parent reports of two relevant dimensions of temperament, shyness and assertiveness.<sup>1</sup>

## Methods

### Participants

Participants were 132 children (66 girls, 66 boys;  $M$  age= 9.46,  $SD$  =.33; 72% White, 13.6% African American, 8.3% Asian, 6.1% other; annual income 18.2% \$0-\$29,999, 28.8% \$30,000-\$59,999, 24.2% \$60,000-\$79,999, and 23.5% \$90,000 or over, and 5.3% unknown), who were recruited from a larger study of peer victimization. For the larger study, parents completed written consent forms and children provided verbal assent when children were in 2<sup>nd</sup> grade. Of the 724 eligible families, 576 (80%) provided consent at initial wave; 60 additional families provided consent at the second wave. At wave one, participants and non-participants did not significantly differ in sex,  $\chi^2(1) = 0.15$ ,  $ns$ , age,  $t(723) = 0.63$ ,  $ns$ , ethnicity (white vs. minority),  $\chi^2(1) = 0.59$ ,  $ns$ , or school lunch status (full pay vs. subsidized),  $\chi^2(1) = 0.35$ ,  $ns$ .

During the summer after the 3<sup>rd</sup> grade or fall of the 4<sup>th</sup> grade, families were invited to participate in a supplemental study involving an interaction with an unfamiliar peer. They were contacted in random order until 318 (50%) were invited to participate in this study. Of these families, 239 expressed interest and 132 participated; nonparticipating families had scheduling conflicts or were not eligible due to exclusion criteria unrelated to the present analyses.

Participants were partnered with an unfamiliar peer to form same-sex dyads. Both members of the dyad were participants, allowing for a naturally occurring interaction. Participants from different school districts were paired to ensure lack of familiarity between partners; otherwise, children were randomly assigned to same-sex dyads.

### Procedures

Children participated in a 3-4 hour laboratory visit. Upon arrival, parents and children provided written consent/assent for the supplemental study. Children first completed measures of

peer victimization and depressive symptoms and then engaged in a social challenge task. To ensure a lack of contact, dyadic partners were kept in separate rooms prior to the interaction.

In the first phase, children were told that they would each build a replica of a block model and that they would receive a prize for completing the model. They were given a set of blocks that was sufficient to complete only one model, and were allowed to build for nine minutes. In the second phase, children were informed that they would each receive a prize for their efforts, and were instructed to decide on the distribution of two prizes of noticeably unequal value (e.g., an art set and a pad of paper). This ecologically valid task was designed to examine children's responses to the two social challenges (insufficient materials, distribution of unequal prizes). After debriefing, the participant who had received the less valuable prize was given the opportunity to exchange it for the more valuable prize.

## Measures

Table 1 presents descriptive statistics and reliability of the measures. All measures had adequate reliability.

**Peer victimization.** A revised version (Rudolph et al., 2011) of the Social Experiences Questionnaire (Crick & Grotpeter, 1996) was used to assess children's everyday experiences of overt victimization (11 items, e.g., "How often do you get pushed or shoved by another kid?") and relational victimization (10 items, e.g., "How often do other kids leave you out on purpose when it's time to play or do an activity?"). Children indicated how often each item occurred on a 5-point scale (*Never to All the Time*). Research supports the validity of self-reported

victimization, which corresponds with peer (Graham & Juvonen, 1998), and parent (Bollmer, Harris, & Milich 2006) reports and behavioral observations (Ladd & Kochenderfer-Ladd, 2002).

Overt victimization and relational victimization were strongly correlated  $r(129) = .77, p < .001$  and were combined due to their high similarity.

**Depressive symptoms.** Children completed the Short Mood and Feelings Questionnaire (Angold, Costello, Messer, & Pickles, 1995) to assess depressive symptoms within the past two weeks (13 items; e.g. “I felt unhappy or miserable.”). Children rated each item on a 5-point scale (*Not at All* to *Very Much*). Scores were computed as the mean of the items ( $\alpha = .80$ ). Validity has been established through moderately high correlations with the Children’s Depression Inventory and the Diagnostic Interview Schedule for Children (Angold et al., 1995). This measure also is able to differentiate depression from other psychiatric disorders (Thapar & McGuffin, 1998).

**Responses to stress.** Following the social challenge task, each child separately observed a videotape of their interaction and indicated the amount they engaged in rumination (4 items; e.g., “I kept thinking, ‘I hate this.’”) and problem solving (4 items; e.g., “I tried to focus on making a fair decision.”) during the task. Children rated each item on a 5-point scale (*Not at All* to *Very Much*). Prior research supports the validity of self-reported responses to laboratory social stressors (Stroud et al., 2009). In a previous study using the same paradigm in a different sample (Rudolph, Troop-Gordon & Flynn, 2009), self-reported rumination was significantly associated with observer reports of emotion dysregulation ( $r = 0.48$ ), supporting the validity of such self-reports.

**Covariates.** All analyses controlled for sex (0 = boys, 1 = girls), lunch status (0 = full price, 1 = free or reduced), and ethnicity (0 = non-minority 1 = minority). Because differences in the dyadic-level quality of the interactions could affect children’s stress responses, analyses also adjusted for observer-coded dyad negativity. On a scale of 1 (*Not at All Present*) to 7 (*To a Large Degree Present*) coders provided an overall rating of dyadic negativity based on several

aspects of the dyadic interaction (e.g. engaged in negative interchanges or arguments, appeared uncomfortable, upset, or annoyed). To assess reliability, two independent coders rated 25% of interactions. The intraclass correlation coefficient (ICC) for dyad negativity showed strong agreement (ICC = .92). Parents reported on a scale of 1 (*Almost Always Untrue*) to 5 (*Almost Always True*) of shy (e.g. “Is shy with new people.”) and assertive/dominant (e.g. “Likes to be in charge.”) temperament were averaged from two years prior to the study and added as separate covariates. Shyness and assertive/dominant temperaments were measured as subscales of the Temperament in Middle Childhood Questionnaire (Simonds & Rothbert, 2004).

## Results

### Overview of Analyses

First, we conducted t-tests to examine the main effects of sex and we examined the bivariate correlations among victimization, rumination, problem solving, and depression (Table 1). Second, hierarchical linear modeling analyses were conducted in HLM 7 (Bryk & Raudenbush, 1992) to test our main hypothesis. These analyses account for the dyadic nature of the data (i.e., children nested within dyads; Kenny, Kashy, & Cook, 2006). Three sets of models were run to examine whether: (1) victimization predicted responses to stress (rumination and problem solving) (Table 2); (2) victimization predicted depressive symptoms (Table 3); and (3) responses to stress predicted depressive symptoms after accounting for victimization (Table 4). The indirect effect of victimization on depressive symptoms through responses to stress was examined using the Sobel (1982) test. Separate models were tested to predict each type of response to stress (rumination and problem solving).<sup>2</sup> Mean-centered victimization and responses to stress were entered at Level 1, along with covariates (sex, lunch status, and ethnicity). Dyad negativity was entered as a covariate at Level 2 predicting the intercept. Intercepts were treated as random factors, and slopes were treated as fixed factors. Interactions between victimization and sex were examined. Because none of these interactions was significant, the interaction terms were dropped.

### Main Effects of Sex

There were no significant effects of sex on victimization,  $t(129) = -.46$ , *ns*, rumination,  $t(128) = .07$ , *ns*, problem solving,  $t(128) = .13$ , *ns*, or depressive symptoms,  $t(129) = .11$ , *ns*.

### Bivariate Correlations



Victimization was significantly related to rumination in girls, but not boys. Victimization was not significantly related to problem solving in girls or boys. Victimization and rumination were significantly related to depressive symptoms in girls and boys. Rumination was not significantly related to problem solving but was significantly related to depressive symptoms in girls and boys. Fisher's *r*-to-*z* transformations were used to examine sex differences in these associations. Correlations between variables of interest did not significantly differ between girls and boys ( $Z_s < .91$ , *ns*).

### **Responses to Stress as Mediators of the Link between Victimization and Depression**

**Rumination.** HLM analyses revealed that victimization significantly predicted rumination (Table 2) and depression (Table 3). When victimization and rumination were entered together in a model predicting depressive symptoms, both victimization and rumination significantly predicted depressive symptoms (Table 4). As predicted, there was a significant indirect effect of victimization on depressive symptoms through rumination ( $Z = 2.06$ ,  $p = .04$ ).

**Problem solving.** HLM analyses revealed that victimization did not predict problem solving (Table 2) but significantly predicted depressive symptoms (Table 3). When victimization and problem solving were entered together in a model predicting depressive symptoms, victimization, but not problem solving, significantly predicted depressive symptoms (Table 4). Because victimization did not predict problem solving and problem solving did not predict depressive symptoms, the indirect effect was not examined.

### **Supplemental Analyses Adjusting for Temperament**

Shyness and assertiveness were not significantly associated with victimization, rumination, problem solving, or depression ( $r_s < .16$ , *ns*). In the HLM models, after adjusting for shyness and assertiveness we found a similar pattern of results: (1) victimization predicted

rumination ( $b = .31, p = .002$ ), but not problem solving ( $b = .11, ns$ ); (2) victimization predicted depression ( $b = .21, p < .001$ ); and (3) When victimization and rumination were entered together in a model predicting depressive symptoms, both victimization ( $b = .17, p < .001$ ), and rumination ( $b = .13, p = .009$ ), significantly predicted depressive symptoms. When victimization and problem solving were entered together in a model predicting depressive symptoms, victimization ( $b = .21, p < .001$ ), but not problem solving ( $b = .11, ns$ ), significantly predicted depressive symptoms. Rumination accounted for the indirect effect between victimization and depression ( $Z = 2.07, p = .04$ ).

## **Discussion**

The present investigation aimed to understand how prior peer victimization is related to responses to a novel social stressor, and how these stress responses are linked to depressive symptoms. Specifically, we hypothesized that less problem solving or more ruminative responses to stress would account for the association between victimization and depressive symptoms. Consistent with the hypotheses, children's prior exposure to peer victimization at school was related to heightened ruminative response styles about a stressful interaction with a novel peer, and ruminative responses partially mediated the link between victimization and depressive symptoms. These results suggest that even when children who have been victimized are taken out of the context in which the victimization occurred, this adverse history of peer experiences predicts their responses to stressful social situations with unfamiliar peers.

### **Peer Victimization as a Predictor of Rumination**

A stressor involving an unfamiliar peer might be especially salient during middle childhood when increasing emphasis is put on developing peer relationships and on evaluations by peers (Gummerum & Keller, 2008). In the current study, prior victimization experiences might have led children to view social challenges (e.g., negotiating a lack of resources and distributing prizes of unequal value) as threatening. Heightened attention to potential threat may prime youth to view ambiguous situations as hostile. Indeed, victimization is related to more hostile attribution biases (Hoglund & Leadbeater, 2007; Taylor, Sullivan, & Kliwer, 2012). Attention to threat and hostile attributions may fuel the negative, repetitive thoughts characteristic of rumination.

Exposure to victimization also might create potential complications in the formation of new peer relationships and cause children to engage in self-blaming about peer stress (Graham &

Junoven, 1998, Prinstein, Cheah, & Guyer, 2005; Taylor et al., 2012). Indeed, in a study that asked victims to identify why they are victimized, a confirmatory factor analysis identified self-critical attributions that were based on the victims' personal attributes (e.g. "Kids think you are not cool, lame."; Visconti, Kochenderfer-Ladd, & Clifford, 2013). A history of prior victimization also may have led children to experience stronger emotional responses to the laboratory social challenge. Indeed, victimization is associated with heightened negative emotions, such as fear and anger (Kochenderfer-Ladd, 2004) and more emotion dysregulation (McLaughlin et al., 2009). Self-blaming attributions and heightened emotional arousal may cause children to ruminate in response to peer stress.

### **Rumination as a Predictor of Depression**

In turn, a tendency to ruminate about peer stressors may be linked to depressive symptoms via two pathways. First, rumination may lead to dysregulation in thought patterns. As children enter middle childhood, their social-cognitive styles are still maturing. Frequent rumination associated with victimization eventually may create a sense of low self-control or hopelessness about social situations. Prolonged feelings of a lack of control and hopelessness may lead to depressive symptoms (Abramson, Metalsky, & Alloy, 1989; Rudolph, Kurlakowsky, & Conley, 2001). Indeed, research shows that rumination is associated with more acute negative mood after the experience of a stressor (Nolen-Hoeksema et al., 1994; Nolen-Hoeksema, & Morrow, 1991).

Second, rumination may lead to depressive symptoms via physiological dysregulation of the stress response system. Social-evaluative stressors are associated with heightened cortisol reactivity compared to stressors that do not involve a social component (Dickerson & Kemeny, 2004). Ruminating about social stress may increase vigilance about potentially threatening

situations, perhaps leading to self-imposed perceptions of social evaluation that enhance biological stress responses associated with depression, such as heightened cortisol reactivity (Guerry & Hastings, 2011).

### **Rumination Accounts for the Association between Victimization and Depression**

Of note, this study is the first to reveal that victimization is associated with rumination about social stress unrelated to victimization and that this type of rumination accounts for the victimization-depression link. These findings are consistent with previous studies documenting that depressive rumination (Feinstein et al., 2014; McLaughlin et al., 2009) and rumination about victimization (Mathieson et al., 2014) account for the association between victimization and depressive symptoms as well as research showing that more general responses to stress mediate between victimization and depressive symptoms over time (Troop-Gordon et al., in press). However, this study extends prior research by examining rumination within the context of a naturalistic interaction with a novel peer, mirroring the context of meeting a peer for the first time outside the laboratory. Examining rumination in this context is revealing because daily interactions with familiar peers can influence future social expectations or trigger memories of past victimization. Even if children are victimized at school, it might be the case that they have peers outside the school context who are unaware of the school milieu, which could provide an opportunity for more adaptive peer relationships. The current findings suggest that children who have been more victimized in the school context carry over maladaptive responses to stress with unfamiliar peers in novel social situations. Less adaptive responses to stress linked to victimization may alienate peers, potentially leading to further victimization.

Rumination can be difficult to study naturalistically because there may be individual differences in the amount of stress experienced by different children. The current research

benefits from a laboratory stressor with two challenges that were standardized for all children. This design gives credence to the idea that prior exposure to victimization might impede children's ability to respond effectively to other forms of social stress, which is linked to depressive symptoms. Despite the advantages of using a novel peer context, there might be concern about variability in the nature of the dyadic interactions that emerge in a naturalistic context due to differences in the negativity of the peer partner. To address this issue, the current study adjusted for differences in the negativity of the dyadic interaction, thus balancing the ecological validity of an unfamiliar peer context with a controlled laboratory task in order to ascertain whether victimization predicts rumination during novel social stressors. It is notable that victimization predicted rumination beyond the significant effect of dyad negativity.

### **Limitations and Future Directions**

This research was limited by the concurrent nature of the design. Although victimization and rumination were assessed in different contexts, future research would benefit from longitudinal designs examining whether victimization predicts changes in responses to stress over time. Also, including teachers or parents as reporters would give multiple perspectives on the child. Teachers may have more objective views of children because teachers encounter so many students so that they are well aware of which experiences and behaviors are normative.

In the future, problem solving may be studied in the context of peer relationships. In this study, victimization was not associated with fewer problem solving responses to stress. In contrast to the more general, emotionally driven rumination items, all the problem solving items focused on negotiating the lack of puzzle pieces and prize distribution. Children who have been exposed to victimization might focus more on the unfamiliar peer than the lack of resources, weakening the link between victimization and problem solving. Instead, rumination about a

stressful social situation might be more similar to experiences with victimization because of the shared social aspect.

## **Conclusion**

Overall, this research supported the hypothesis that rumination in response to a social stressor with an unfamiliar peer would account for the association between prior victimization and depressive symptoms. Therefore, interventions might aim to reduce rumination in the face of victimization. This type of intervention has potential to impact the domain of peer relationships more broadly because the current research indicates peer victimization is not limited to interactions with specific aggressors, but has implications for novel peer relationships.

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## Tables

**Table 1**

*Descriptive Statistics and Intercorrelations of Study Variables*

Measures	Boys		Girls		1	2	3	4
	M( <i>SD</i> )	$\alpha$	M( <i>SD</i> )	$\alpha$				
1. Victimization	1.81(.64)	.93	1.76(.71)	.95	-	.22	.20	.61***
2. Rumination	1.49(.71)	.75	1.48(.63)	.79	.34**	-	.21	.46
3. Problem Solving	3.98(.80)	.81	3.97(.80)	.80	.04	.08	-	.09
4. Depression	1.42(.37)	.74	1.41(.40)	.86	.67***	.46***	-.02	-

*Note.* Scores for boys are below the diagonal, scores for girls are above the diagonal.

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

Table 2

*Hierarchical Linear Modeling Analyses Predicting Responses to Stress from Victimization*

	Rumination		Problem-Solving	
	Coef(SE)	<i>t</i>	Coef(SE)	<i>t</i>
Intercept	-.91(.25)	-3.59***	.17(.26)	.65
Dyad Negativity	.50(.17)	2.92**	-.25(.17)	-1.42
Sex (0 = boys, 1 = girls)	.18(.13)	1.38	.01(.19)	.04
Lunch (0 = full, 1 = reduced/free)	-.12(.20)	-.58	-.03(.19)	-.19
Ethnicity (0 = non-minority, 1 = minority)	.37(.21)	1.79	.71(.19)	3.83***
Victimization	.29(.10)	2.88**	.10(.07)	1.39

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

Table 3

*Hierarchical Linear Modeling Analyses Predicting Depressive Symptoms from Victimization*

	Coef(SE)	<i>t</i>
Intercept	1.32(.09)	14.22***
Dyad Negativity	.03(.05)	0.66
Sex (0 = boys, 1 = girls)	.00(.06)	-.05
Lunch Status (0 = full, 1 = reduced/free)	.04(.06)	.71
Ethnicity (0 = non-minority, 1 = minority)	.08(.06)	1.25
Victimization	.21(.03)	6.23***

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



Table 4

*Hierarchical Linear Modeling Analyses Predicting Depressive Symptoms from Victimization and Responses to Stress*

	Rumination		Problem-Solving	
	Coef(SE)	<i>t</i>	Coef(SE)	<i>t</i>
Intercept	1.44(.08)	17.63***	1.33(.09)	14.05***
Dyad Negativity	-.03(.04)	-.67	.02(.05)	.43
Sex (0 = boys, 1 = girls)	-.03(.05)	-.48	.00(.06)	-.04
Lunch (0 = full, 1 = reduced/free )	.05(.06)	.85	.04(.06)	.64
Ethnicity (0 = non-minority, 1 = minority )	-.02(.05)	.38	.10(.06)	1.67
Victimization	.17(.03)	5.88***	.21(.03)	6.50***
Responses to Stress	.13(.04)	2.95**	-.04(.03)	-1.48

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

## Footnotes

<sup>1</sup> Because temperament data were only available for a subset of 129 participants, analyses including temperament are supplemental.

<sup>2</sup> Analyses were originally run separately for overt and relational victimization and were highly similar, therefore, analyses were subsequently combined by averaging overt and relational victimization.