

# Rejection Sensitivity and Vulnerability to Self-Directed Hostile Cognitions Following Rejection

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## Abstract

We examined the hypothesis that rejection increases self-directed hostile cognitions in individuals who are high in rejection sensitivity (RS). In four studies employing primarily undergraduate samples ( $Ns = 83-121$ ), rejection was primed subliminally or through a recall task, and self-directed hostile cognitions were assessed using explicit or implicit measures. Negative or neutral control conditions were used in three of the studies. Measures of RS were obtained in pretesting. High RS participants were more likely than low RS participants to report or show greater self-directed hostile cognitions in rejection conditions, compared to control conditions. Results held when controlling for depressive symptoms, history of self-directed hostile cognitions, and general hostility. RS may represent a unique vulnerability for self-directed hostile cognitions, a predictor of self-harmful behavior.

A growing body of research suggests that rejection sensitivity (RS), a personality disposition characterized by the tendency to anxiously expect and overreact to rejection (Downey & Feldman, 1996), predisposes individuals to respond to social rejection with hostility or even violence (e.g., Ayduk, Gyurak, & Luerssen, 2008; Downey, Feldman, & Ayduk, 2000), a behavioral pattern that can undermine close relationships (Downey, Freitas, Michaelis, & Khouri, 1998). The present research examines whether high RS individuals are also more likely to experience self-directed hostility, independent of general hostility, following rejection.

## Rejection Sensitivity and Hostility Toward Others

Although rejection is an unpleasant experience for most people (Baumeister & Leary, 1995; Leary & Downs, 1995), those who are high in RS tend to process rejection cues in ways that amplify maladaptive responses, particularly those involving expressions of hostility and aggression (Downey & Feldman, 1996). In one series of studies, high compared to low RS women showed a stronger implicit cognitive association between rejection and hostility, were more likely to derogate another participant who chose not to work with them, and were more likely to engage in conflicts with romantic partners on days after they felt rejected (Ayduk, Downey, Testa, Yen, & Shoda, 1999). Other research suggests that high RS men are more likely than low RS men to react aggressively toward romantic partners, provided that they tend to seek rather than

avoid intimacy (Downey et al., 2000). Finally, in an experimental paradigm using a behavioral index of aggression, higher RS individuals were found to allocate more hot sauce to an interaction partner who did not like spicy food when participants were led to believe that the partner had rejected them (vs. not) in a previous task (Ayduk et al., 2008).

One factor that helps to explain the link between RS and hostility is the tendency for high RS individuals to perceive intentional rejection in ambiguous behavior (Downey & Feldman, 1996; Downey, Lebolt, Rincon, & Freitas, 1998). In other words, they are more likely to readily assume that an interpersonal slight is intended to hurt them or to communicate a negative evaluation. In addition to eliciting anger toward others, this processing style may also give rise to negative feelings about the self.

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## Rejection Sensitivity and Self-Directed Hostile Cognitions

According to sociometer theory (Leary & Downs, 1995), which views self-esteem as a barometer for belongingness, rejection communicates lowered relational value and can therefore undermine feelings of self-worth and deservingness of happiness (Wood, Heimpel, Manwell, & Whittington, 2009). Because high RS individuals are more likely to interpret rejection as deliberate and personal (Downey & Feldman, 1996), they may also be more likely to make negative inferences about their own deservingness, even concluding that they deserve to suffer or be punished for perceived inadequacy. In addition, they may interpret rejection as a failure to attain important self-standards (Ayduk, Gyurak, & Luerssen, 2009), a judgment that has been shown in prior research to increase the accessibility of suicidal thoughts (Chatard & Selimbegović, 2011).

Consistent with the idea that rejection may be more self-threatening for individuals high in RS, a longitudinal study found that high RS women experienced greater depressive symptoms than low RS women following a partner-initiated breakup (Ayduk, Downey, & Kim, 2001). RS is also associated with self-silencing and self-sacrificing behaviors such as ingratiation, engaging in immoral behavior to please a partner, and suppressing authentic thoughts and feelings (Ayduk, May, Downey, & Higgins, 2003; Purdie & Downey, 2000; Romero-Canyas et al., 2010). These findings suggest that high RS individuals may respond to rejection or threats of rejection in ways that put their own well-being in jeopardy.

Beyond contributing to psychological distress and eroding self-esteem, self-directed hostile cognitions may also increase the likelihood of more overt self-harmful behavior. Previous research suggests that feelings of anger toward the self are primary proximal causes of self-injurious behavior (e.g., Nock, Prinstein, & Sterba, 2009), making it imperative to understand their origin. Self-injurious behavior is a serious public health problem that is not limited to clinical populations. Suicide is currently the third leading cause of death in adolescents and young adults (Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, 2010), and non-suicidal self-injury, a risk factor for suicidal behavior (Whitlock & Knox, 2007), affects as many as 17% of college students (Whitlock, Eckenrode, & Silverman, 2006) and approximately 18% of adolescents (Muehlenkamp, Claes, Havertape, & Plener, 2012).

There is some evidence from the self-injury literature for a link between rejection and self-directed hostile cognitions. Cross-sectional research has shown that self-injury is associated with interpersonal stressors and low sense of belonging (Conner, Britton, Sworts, & Joiner, 2007; Hawton & Harriss, 2008), and an ecological momentary assessment study of individuals with a history of self-injury found that self-harmful thoughts were especially likely to occur in social situations (Nock et al., 2009), suggesting that negative social interactions

may serve as a proximal trigger. No research to date, however, has examined proximal triggers experimentally or examined how individual differences interact with such triggers to predict psychological antecedents of self-harm, such as self-directed hostile cognitions. The current research aimed to address these gaps.

## The Present Research

Building on prior research linking RS to other-directed hostility, we hypothesized that high RS individuals would respond to rejection with greater self-directed hostile cognitions, measured both implicitly and explicitly, and that this relationship would be independent from general or other-directed hostility. In Study 1, we examined whether high RS participants were more likely than low RS participants to report having experienced self-directed hostile cognitions following a negative interpersonal event. Studies 2–4 sought to replicate Study 1 using experimental manipulations of rejection involving a visualization task (Study 2), subliminal semantic priming (Study 3), and a recall task (Study 4). A range of control conditions was used, including negative control conditions involving fear or disgust (Studies 2–4) and neutral control conditions (Studies 2 and 3). Self-directed hostile cognitions were assessed with self-report measures (Studies 1 and 2), a measure of implicit association (Study 3), and a measure of behavioral intentions (Study 4).

Because prior work has shown that RS is related to general negative affectivity (Downey & Feldman, 1996), we assessed depressive symptoms in Studies 2–4 to examine whether the relationship between RS and self-directed hostile cognitions was due specifically to rejection sensitivity as opposed to a general tendency toward negative affectivity. Neuroticism was assessed in place of depressive symptoms in Study 1, for which we made use of an existing dataset that included relevant measures, but that was not originally designed to test our specific hypotheses. We also assessed recent history of self-directed hostile cognitions, operationalized in Studies 2–4 as self-harmful thoughts experienced over the past 3 months and in Study 1 as history of suicidal thoughts or attempts, to examine whether the relationship between RS and self-directed hostile cognitions was specific to rejection-related contexts as opposed to a general tendency to experience self-directed hostile cognitions in daily life. Finally, in Studies 2–4, we included measures of general or other-directed hostility following experimental manipulations (a hostility measure was not available in Study 1). Because prior work has demonstrated that hostility is likely to follow rejection among high RS individuals, it was critical to examine whether self-directed hostile cognitions were elicited independent of general hostility.

## STUDY 1

Study 1 used data from a cross-sectional survey to examine the hypothesis that high RS individuals would be more likely than

those low in RS to respond to a rejection-related event with self-directed hostile cognitions, operationalized as urge to harm the self.

## Method

**Participants.** One hundred thirty-seven undergraduate and graduate students<sup>1</sup> participated in a one-session study for monetary compensation. In analyses involving responses to a recalled negative event that had occurred recently (see Procedure and Materials for details), we were interested in responses to rejection experiences or to related negative interpersonal events (e.g., relationship conflict, hurt feelings). Therefore, we excluded 27 participants who wrote about events that did not fit this category (e.g., a sports-related physical injury, hitting a parked car, poor grades, financial difficulties). We also excluded four participants who could not identify a negative event from the past 2 weeks. Levels of RS, the key predictor variable, did not differ significantly between the excluded and included groups (included  $M = 9.24$ ,  $SD = 3.56$ ; excluded  $M = 9.78$ ,  $SD = 3.57$ ;  $F(1, 135) = 0.56$ ,  $p = .46$ ).

One hundred six participants (56% female;  $M_{\text{age}} = 21.22$ ,  $SD = 4.10$ ) remained after exclusions. Forty-five percent of these participants self-identified as European American, 28% as Asian American, 15% as African American, 5% as American Indian, 3% as Middle Eastern, and 4% were missing. Of these, 9% of participants identified as Hispanic.

**Procedure and Materials.** Participants completed a series of questionnaires in a single lab session. These questionnaires included assessments of RS, neuroticism (depressive symptoms were not assessed in this study), and history of suicidal thoughts or attempts, as well as a negative event recall task and follow-up questions assessing self-directed hostile cognitions and other reactions to the event.

**Rejection Sensitivity.** The Rejection Sensitivity Questionnaire (RSQ) measures the degree to which people expect rejection and are anxious about the possibility of its occurrence (see Downey & Feldman, 1996, for details). The measure includes 18 hypothetical interpersonal situations that afford the possibility of rejection (e.g., “you ask someone you do not know well out on a date”; “you ask your boyfriend/girlfriend if he/she really loves you”). For each situation, participants indicate their level of anxiety about the possibility of a negative outcome (1 = *not anxious*, 6 = *very anxious*) and perceived likelihood of acceptance (1 = *very likely*, 6 = *very unlikely*). The latter is reverse-scored to index expectations of rejection and then multiplied by level of anxiety for each situation. The multiplicative terms are averaged across the 18 (or eight for the short version; see Study 3) scenarios to index overall levels of anxious expectations of rejection. The possible scores range from 1 to 36 (or 16 for the short version; see Study 3). The measure is internally reliable (Downey & Feldman, 1996) and shows good predictive utility (see Pietrzak, Downey, & Ayduk,

2005, for a review). The RS scale was internally consistent in this sample ( $\alpha = .90$ ;  $M = 9.24$ ,  $SD = 3.56$ ).

**Neuroticism.** Neuroticism was measured with a seven-item subscale from the Big Five Inventory (BFI-44; John, Donahue, & Kentle, 1991). Participants were instructed to indicate how much they “see myself as someone who . . .” followed by items such as “is depressed, blue” and “is emotionally stable, not easily upset” (reverse-scored). Responses were made on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). The Neuroticism subscale was internally consistent ( $\alpha = .78$ ;  $M = 3.00$ ,  $SD = 0.79$ ).

**History of Self-Directed Hostile Cognitions.** In this study, we assessed history of self-directed hostile cognitions with a single item regarding suicidal thoughts and behaviors: “Have you ever thought of or attempted suicide?” A measure of history of self-directed hostile cognitions not specific to suicide was not available in this study. Responses were made on a yes-no scale. Thirty-two participants responded “yes” to this item, and three did not respond.

**Negative Event Recall.** Participants were first instructed to recall “the most negative experience you had within the past one or two weeks” and to describe the experience in writing. As discussed above, we focused our analyses on participants who identified negative interpersonal events ( $N = 106$ ). These events included interpersonal conflicts, romantic breakups, unrequited romantic interest, social exclusion, hurt feelings, and saying goodbye to friends or family.

**Self-Directed Hostile Cognitions.** After writing about the negative event, participants were instructed to vividly recall their feelings during and after the negative event and indicate whether (yes-no response) they felt an urge to harm themselves (among several other somatic responses, such as headaches, heart pounding, and sleep difficulty).<sup>2</sup> Seven participants reported feeling an urge to harm themselves.

## Results

**Preliminary Analyses.** Neither gender nor ethnicity was significantly related to RS or self-directed hostile cognitions, nor did either interact with RS to predict self-directed hostile cognitions, so these variables were not included in subsequent analyses. Zero-order correlations for all variables in all studies are presented in Table 1.

**Urge to Harm Self.** Consistent with our hypotheses, participants who reported self-directed hostile cognitions following the negative event were significantly higher in RS ( $M = 13.82$ ,  $SD = 3.72$ ) than participants who did not report self-directed hostile cognitions ( $M = 8.91$ ,  $SD = 3.33$ ),  $F(1, 104) = 13.97$ ,  $p < .001$ ,  $d = 1.39$ . A binary logistic regression with self-directed hostile cognitions as the categorical

**Table 1** Zero-Order Correlations

Study 1	1.	2.	3.	4.	5.
1. RS	—				
2. Neuroticism	0.39***	—			
3. History	0.37***	0.38***	—		
4. Self-directed hostile cognitions	0.34***	0.20**	0.15	—	
Study 2	1.	2.	3.	4.	5.
1. RS	—				
2. Depressive symptoms	0.31**	—			
3. History	0.11	0.25**	—		
4. Self-directed hostile cognitions	0.27**	0.48***	0.06	—	
5. Other-directed hostility	0.24**	0.15+	0.13	0.50***	—
6. Rejected feelings	0.20*	0.33***	0.04	0.40***	0.25**
Study 3	1.	2.	3.	4.	5.
1. RS	—				
2. Depressive symptoms	0.38**	—			
3. History	0.16	0.51***	—		
4. IAT score	0.15	0.09	-0.02	—	
5. General hostility	0.25*	0.33**	0.23*	-0.18	—
Study 4	1.	2.	3.	4.	5.
1. RS	—				
2. Depressive symptoms	0.42***	—			
3. History	0.28**	0.37***	—		
4. Desired pain length	0.23*	0.11	0.22*	—	
5. General hostility	0.24*	0.32**	0.08	0.17	—
6. Rejected feelings	0.27*	0.25*	0.11	0.11	.60**

Note. RS = rejection sensitivity; IAT = Implicit Association Test. For IAT scores, higher values indicate a greater self-harm association.  
+ $p < .10$ . \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

dependent variable and RS as the predictor variable was also significant,  $B = 0.47$ ,  $SE = 0.16$ ,  $Wald = 8.87$ ,  $p = .003$ ,  $Exp(B) = 1.60$ .

**Covariate Analyses.** We next examined whether RS remained a significant predictor of self-directed hostile cognitions when controlling for neuroticism and history of self-directed hostile cognitions in the logistic regression described above (history was coded 1 = *yes*, 0 = *no*). When these covariates were included in the model, RS remained a significant predictor of self-directed hostile cognitions,  $B = 0.46$ ,  $SE = 0.18$ ,  $Wald = 6.74$ ,  $p = .009$ ,  $Exp(B) = 1.58$ .

## STUDY 2

The results of Study 1 indicated that RS was associated with a greater likelihood of experiencing self-directed hostile cognitions following a negative interpersonal event. In Study 2, we

sought to replicate this finding using an experimental design. Participants were randomly assigned to vividly recall either a rejection, a negative (fear-based) event, or a neutral event and to then report self-directed hostile cognitions. The negative and neutral control conditions were included in order to examine whether the relationship between rejection sensitivity and self-directed hostile cognitions was specific to rejection situations. To rule out alternative hypotheses, as described above, we assessed depressive symptoms, history of self-directed hostile cognitions (in this study, incidence of self-harmful thoughts in the last 3 months), and post-manipulation other-directed hostility.

## Method

**Participants.** One-hundred fifty-one undergraduates participated in a two-session study for course credit or monetary compensation. Seventeen participants were excluded because they did not complete the manipulation recall task (i.e., they did not turn on the audio file, stated that they did not listen to the instructions, left the written description of the event blank, or wrote something nonsensical or unrelated to the task). Thirteen additional participants were excluded because the events they recalled in the negative condition, and in one case in the neutral condition, involved rejection-related events such as interpersonal conflict, physical abuse, and being left alone or abandoned. The group of excluded participants did not differ significantly from included participants in level of RS (included  $M = 9.16$ ,  $SD = 3.42$ ; excluded  $M = 9.88$ ,  $SD = 3.79$ ;  $F = 1.04$ ,  $p = .31$ ). Of the remaining 121 participants (74% female;  $M_{age} = 20.55$ ;  $SD = 3.31$ ), 52% were Asian American, 29% European American, 10% Latino/a, 3% Middle Eastern, and 6% other or missing.

**Preliminary Surveys.** In an initial survey session, which preceded the experimental session by at least one day, participants completed measures of RS, depressive symptoms, and history of self-directed hostile cognitions.

**Rejection Sensitivity.** RS was again measured using the RSQ from Study 1 ( $\alpha = .90$ ;  $M = 9.16$ ,  $SD = 3.41$ ).

**Depressive Symptoms.** The 20-item Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977) assessed depressive symptoms. The CES-D has demonstrated high reliability and validity (e.g., Shafer, 2006) and is used in both clinical and nonclinical samples. Participants indicate how often they felt certain ways over the past week, including items such as "I felt sad" and "I could not get going." Each item is rated on a 4-point scale (0 = *Rarely*, 3 = *Almost Always*) and is computed as a sum total of depressive responses and reverse-coded non-depressive responses. The scale was internally consistent ( $\alpha = .90$ ;  $M = 14.63$ ,  $SD = 9.37$ ). Responses on this scale were missing for one participant.



**History of Self-Directed Hostile Cognitions.** History of self-directed hostile cognitions was assessed by asking participants to indicate on a 5-point scale how often in the past 3 months they had thought about hurting themselves (1 = *Never*, 5 = *Often*). On average, participants thought about hurting themselves never or very rarely ( $M = 1.24$ ,  $SD = 0.72$ ). Fifteen participants gave ratings above 1, and two participants did not respond to this item. Because the distribution was right-skewed, we performed a log transformation to normalize the distribution and used the log-transformed variable for all subsequent analyses.

**Experimental Session.** In the experimental session, participants were seated in private cubicles and were told that they would be completing a visualization task and then responding to questions about it. The visualization task contained the experimental manipulation, which was delivered via a computer-based audio recording in all conditions. Participants were randomly assigned via a computer program's randomization software to one of three conditions: rejection ( $n = 43$ ), negative control ( $n = 37$ ), or neutral control ( $n = 41$ ). Experimenters were blind to condition.

In the rejection condition, participants were instructed, via audio recording, to recall a recent experience when they were rejected by a friend, romantic partner, or group of people. After being given time to identify such an event, they were instructed to mentally replay the event, doing their best to vividly imagine the event as it unfolded, for 2 minutes.

In the negative control condition, participants were instructed to vividly recall for 2 minutes a recent experience during which they felt fear for their personal safety, such as experiencing a natural disaster, walking in a dangerous neighborhood, or not having enough money for essential expenses. This control condition was used to control for a negative emotion (i.e., fear) presumably unrelated to rejection. As mentioned above, some participants wrote about fear-based experiences that were also related to rejection, such as being left alone by friends in a dangerous area. These participants were excluded from analyses. In the neutral control condition, participants were asked to vividly recall their walk to campus for 2 minutes.

**Manipulation Check.** Immediately following the recall task, participants were instructed to rate on a 5-point scale (1 = *Not at all*, 5 = *A lot*) how much they felt rejected ( $M = 2.44$ ,  $SD = 1.68$ ).

**Self-Directed Hostile Cognitions.** After completing the recall task, all participants completed a measure of self-directed hostile cognitions. Participants were asked to indicate on a 7-point scale (1 = *Strongly disagree*, 7 = *Strongly agree*) how much they agreed with a series of statements based on how they felt "right now." The self-directed hostile cognitions composite included three items: "I feel an urge to harm or hurt myself;" "I feel angry and hostile towards myself;" and "I'm

being critical of myself/hard on myself" ( $\alpha = .69$ ;  $M = 2.10$ ,  $SD = 1.11$ ).

**Other-Directed Hostility.** Items assessing other-directed hostility were also assessed on a 7-point scale. The other-directed hostility composite included two items: "I feel an urge to harm or hurt others" and "I feel angry and hostile towards others" ( $\alpha = .76$ ;  $M = 1.69$ ,  $SD = 1.06$ ).

## Results

**Manipulation Check.** A test of the manipulation check revealed that participants in the rejection condition reported feeling significantly more rejected ( $M = 4.44$ ,  $SD = 0.93$ ) than those in the negative ( $M = 1.54$ ,  $SD = 0.87$ ,  $d = 3.22$ ) and neutral ( $M = 1.15$ ,  $SD = 0.36$ ,  $d = 4.67$ ) conditions,  $F(2, 118) = 231.89$ ,  $p < .001$ .

RS did not differ significantly between the rejection condition ( $M = 9.82$ ,  $SD = 3.41$ ) and negative control condition ( $M = 9.41$ ,  $SD = 3.33$ ,  $p = .59$ ) but was significantly greater in the rejection condition compared to the neutral control condition ( $M = 8.24$ ,  $SD = 3.38$ ,  $p = .034$ ). Depressive symptoms showed a similar pattern, with higher levels of depressive symptoms in the rejection condition ( $p = .004$ ), but there were no significant differences for history of self-directed hostile cognitions ( $p = .47$ ). We discuss the implications of this pattern in the interpretation of the findings below.

**Preliminary Analyses.** Neither gender nor ethnicity predicted RS or self-directed hostile cognitions, nor did they interact with condition, RS, or the RS  $\times$  Condition interaction to predict self-directed hostile cognitions; therefore, these variables were not included in subsequent analyses. The same was true in Studies 3 and 4.

**Post-Manipulation Self-Directed Hostile Cognitions.** Self-directed hostile cognitions differed significantly across conditions,  $F(2, 118) = 8.32$ ,  $p < .001$ , with higher scores in the rejection condition ( $M = 2.59$ ,  $SD = 1.33$ ) compared to the negative control condition ( $M = 2.03$ ,  $SD = 0.94$ ) and neutral control condition ( $M = 1.67$ ,  $SD = 0.76$ ). Follow-up simple contrasts comparing the rejection and negative conditions were significant ( $p = .018$ ,  $d = 0.49$ ), as were contrasts between the rejection and neutral conditions ( $p < .001$ ,  $d = 0.85$ ).

In the next step, to assess whether the effect of condition on self-directed hostile cognitions was moderated by RS, we created three dummy-coded condition variables, where 1 represented the condition in question and 0 represented the two other conditions. We then mean-centered RS and created three interaction terms for RS by each of the three conditions. We conducted two linear regression analyses with self-directed hostile cognitions as the dependent variable. In the first regression, we included RS, dummy negative, dummy neutral, and the interaction terms for negative and neutral as predictors. This analysis allowed us to compare these conditions with the

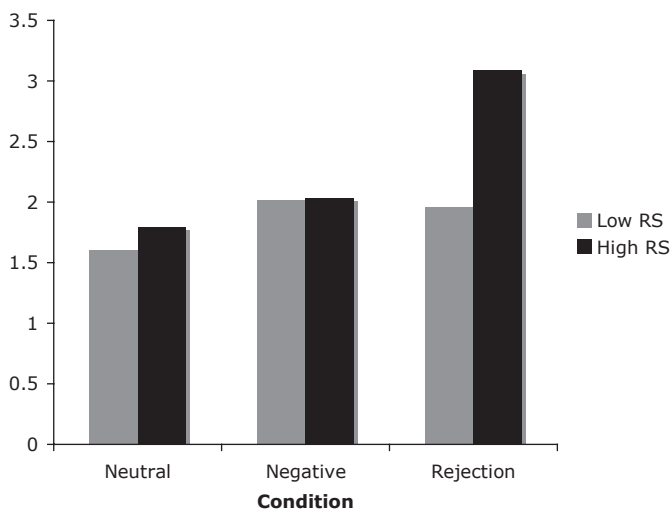
rejection condition. In the second regression, we included dummy rejection instead of dummy negative, allowing us to also compare the negative and neutral conditions.

A significant interaction emerged in the comparison between the rejection and negative conditions,  $\beta = -0.26$ ,  $t(115) = -2.32$ ,  $p = .022$ ,  $f^2 = 0.04$ , as well as between the rejection and neutral conditions,  $\beta = -0.24$ ,  $t(115) = -2.03$ ,  $p = .045$ ,  $f^2 = 0.03$  (see Figure 1). The comparison between the two control conditions, negative and neutral, was not significant,  $\beta = -.04$ ,  $t(115) = -0.36$ ,  $p = .72$ ,  $f^2 < 0.01$ .

Within the rejection condition, RS significantly predicted greater self-directed hostile cognitions,  $\beta = 0.41$ ,  $t(41) = 2.90$ ,  $p = .006$ ,  $f^2 = 0.20$ . RS did not predict self-directed hostile cognitions in either the negative condition,  $\beta = 0.01$ ,  $t(35) = 0.05$ ,  $p = .96$ ,  $f^2 < 0.01$ , or the neutral condition,  $\beta = 0.12$ ,  $t(39) = 0.77$ ,  $p = .45$ ,  $f^2 = 0.01$ . This pattern is consistent with the hypothesis that RS increases the risk of self-directed hostile cognitions specifically in rejection-related contexts.

Furthermore, simple slope analyses revealed that high RS participants (plotted at one standard deviation above the mean) reported significantly greater self-directed hostile cognitions in the rejection condition compared to the negative condition ( $t = 3.30$ ,  $p = .001$ ,  $d = 0.76$ ) and compared to the neutral condition ( $t = 3.79$ ,  $p < .001$ ,  $d = 0.85$ ). By contrast, low RS participants (plotted at one standard deviation below the mean) did not report significantly different levels of self-directed hostile cognitions in the rejection condition compared to either the negative ( $t = 0.16$ ,  $p = 0.87$ ,  $d = 0.04$ ) or the neutral condition ( $t = 1.19$ ,  $p = .24$ ,  $d = 0.27$ ).

Given that the negative control condition was a more conservative control than the neutral control condition, and the comparison between the rejection and negative control conditions yielded the expected pattern of results, with a similar



**Figure 1** Study 2: Interaction between RS and condition predicting self-directed hostile cognitions. RS = rejection sensitivity.

pattern present for rejection versus neutral, it is unlikely that the pattern of results for the comparison between the rejection and neutral conditions was due to lower levels of RS or depressive symptoms in that condition.

**Covariate Analyses.** To examine whether the RS  $\times$  Condition interaction remained a significant predictor of self-directed hostile cognitions when controlling for depressive symptoms, history of self-directed hostile cognitions, and post-manipulation other-directed hostility, we entered these variables as predictors in the regression equation described above. The RS  $\times$  Condition interaction remained significant for the comparison between the rejection and negative conditions,  $\beta = -0.21$ ,  $t(109) = -2.20$ ,  $p = .03$ ,  $f^2 = 0.02$ , and was marginal for the comparison between the rejection and neutral conditions,  $\beta = -0.20$ ,  $t(109) = -1.93$ ,  $p = .057$ ,  $f^2 = 0.02$ .<sup>3</sup>

### STUDY 3

The results of Study 2 indicated that participants high in RS, compared to those low in RS, tended to experience greater self-directed hostile cognitions following rejection, but not following other types of negative and neutral events, and not due simply to the presence of other-directed hostility. In Study 3, we manipulated rejection using a subliminal prime in order to bypass the potential for demand effects, and we again included negative and neutral control conditions. We assessed self-directed hostile cognitions using an implicit measure, an Implicit Association Test (IAT) adapted from Nock and Banaji (2007). We included the same covariates used in Study 2, though in this study general hostility was assessed instead of explicitly other-directed hostility.

### Method

**Participants.** Ninety-seven undergraduates participated in a two-session study for course credit or monetary compensation. Because both the manipulation (a subliminal semantic prime) and the primary dependent measure (a semantic implicit association task) required English-language proficiency, 14 participants were excluded because they had not lived in the United States for more than one year (i.e., they were visiting students attending summer school). The group of excluded participants did not differ significantly from the included participants in level of RS (included  $M = 7.94$ ,  $SD = 3.58$ ; excluded  $M = 9.46$ ,  $SD = 4.06$ ;  $F = 2.07$ ,  $p = .15$ ). Of the remaining 83 participants (57% female;  $M_{\text{age}} = 20.66$  years,  $SD = 3.35$  years), 47% were Asian American, 24% European American, 11% Latino/a, 4% African American, and 6% other, and 8% missing. Due to an error, age was missing for 16 participants, and gender and ethnicity were missing for seven participants.

**Preliminary Surveys.** Participants completed the same measures of depressive symptoms ( $\alpha = .89$ ,  $M = 15.18$ ,  $SD = 9.15$ )

and history of self-directed hostile cognitions ( $M = 1.43$ ,  $SD = 0.90$ ; 20 participants reported frequencies greater than “never”; log-transformed to correct right-skew) from Study 2 in an initial survey session. An eight-item validated short version of the RS questionnaire was used in place of the 18-item version (Downey & Feldman, 1996;  $\alpha = .77$ ,  $M = 7.94$ ,  $SD = 3.58$ ). RS scores were missing for three participants.

**Experimental Session.** In the experimental session, participants were seated in private cubicles and told that they would be completing a series of computer-based categorization tasks and questionnaires. Participants first completed a simple even/odd categorization task in which they were randomly assigned via a computer program’s randomization software to be subliminally primed with a rejection-related word, a negative word, or a neutral word. Participants then completed a self-report measure of general hostility and an IAT designed to assess implicit cognitive associations between self and harm (adapted from the Self-Injury IAT; Nock & Banaji, 2007). Experimenters were blind to condition.

### Materials

**Priming Task.** The priming task involved the foveal subliminal presentation of one word relevant to participants’ randomly assigned prime condition. Participants in the rejection condition ( $n = 29$ ) were presented with the word *abandoned*, whereas participants in the two control conditions (negative and neutral) were presented with *alligator* ( $n = 30$ ) and *armchair* ( $n = 24$ ), respectively. We intentionally chose words of similar length and beginning with the same letter to control for effects of word differences unrelated to meaning. For the task, participants had to classify numbers on the computer screen as either odd or even using the keypad. On each of 60 trials, the target number was presented in the center of the screen for 16.7 ms and was forward and backward masked (150.3 ms and 16.7 ms, respectively) with a string of Xs. Afterward, the target number appeared and remained on the screen until classified. The task, which took about 2 minutes to complete, was administered on computers with 16-inch (40.64 cm) monitors, with participants seated about 24 inches (60.96 cm) from the screen. No participants reported seeing the prime words, and previous studies using a similar priming method and prime length have also confirmed that no participant could discern the prime words (e.g., Horberg & Chen, 2010).

**General Hostility.** Following the subliminal prime, participants were asked to indicate on a 5-point scale (1 = *Not at all*, 5 = *A lot*) how hostile, angry, and irritable they felt in that moment ( $\alpha = .80$ ;  $M = 1.53$ ,  $SD = 0.64$ ).

**Self-Directed Hostile Cognitions.** Self-directed hostile cognitions were assessed using an implicit association task, which assesses the strengths of associations between two concepts by observing response latencies in computer-based cat-

egorization tasks (see Greenwald, Poehlman, Uhlmann, & Banaji, 2009, for a review). The IAT designed for this study was intended to measure cognitive associations between the self (“me”) and harm, and it was adapted from a previously established IAT assessing implicit associations of self-injury (specifically *cutting*; Nock & Banaji, 2007). We chose to replace the word *cutting* (and pictures of cut skin) with the word *harm* (and words related to harm), since we were interested in general self-directed hostile cognitions, not limited to cutting behaviors specifically. In our version of the IAT, participants were asked to classify words along two category axes: me versus not me, and harm versus compassion. The words for “me” were the following: *myself*, *mine*, *I*, *my*, and *self* (*self*, *my*, and *I* were each repeated an extra time to match the other categories). The words for “not me” were the following: *table*, *chair*, *chalk*, *map*, and *boat* (*chalk*, *table*, and *map* were also each repeated an extra time). For the “not me” category, we deliberately chose words related to neutral inanimate objects rather than pronouns referring to other people (e.g., *them* or *their*) in order to avoid a potential confound with feelings of harm or compassion directed toward other people. Thus, our assumption is that the score we observe on the IAT is more likely to be driven by the me-harm versus me-compassion comparison, rather than the “not me” pairings. The words for “harm” were the following: *hit*, *beat*, *injure*, *hurt*, *slap*, *violence*, *wound*, *abuse* (these words have been used in other studies assessing hostility; e.g., Ayduk et al., 1999). The words for “compassion” were the following: *heal*, *care*, *soothe*, *support*, *give*, *kindness*, *help* (*care* was repeated one extra time). In pilot testing these words were determined to be the most highly associated with compassion.

In the first block of trials, only one category axis was presented at a time (e.g., harm vs. compassion, and me vs. not me, each on one side of the screen), and exemplars for each category were presented on the screen one at a time. Participants were instructed to classify these exemplars as quickly as possible by pressing a key corresponding to the category (“e” for the category on the left, “i” for the category on the right). These trials were not used to compute the final IAT score, since they did not include paired associations. In the next block of trials, these category labels were paired, and participants classified exemplars for all four categories at once, using the same key as in the first two individual trial blocks (e.g., “e” for harm OR not me and “i” for compassion OR me). The pairings were then switched (e.g., “e” for harm OR me and “i” for compassion OR not me). The order of these pairings was counterbalanced to control for order effects. The program requires participants to correct errors before proceeding, so this brief delay is factored into the latencies (which are measured when the correct response is selected).

The final IAT score (D) represents the difference in average latency between the two combined tasks (e.g., faster responses for the “harm + me/compassion + not me” trials compared to the “harm + not me/compassion + me” trials indicate a stronger association of “harm” with “me”). Greater self-harm is

represented by lower D scores. IAT scores ranged from  $-0.57$  to  $1.24$ , with a mean of  $0.44$  ( $SD = 0.39$ ), indicating that participants were on average slower to respond to me-harm pairings than to me-compassion pairings. IAT scores were normally distributed.

It is important to note that in the present sample, most participants were expected to show a greater association between self and compassion as opposed to self and harm, so we considered self-directed hostile cognitions not as negative IAT scores per se (only 13 participants had negative IAT scores; they were evenly distributed among the three conditions), but as relatively lower IAT scores compared to other participants.

## Results

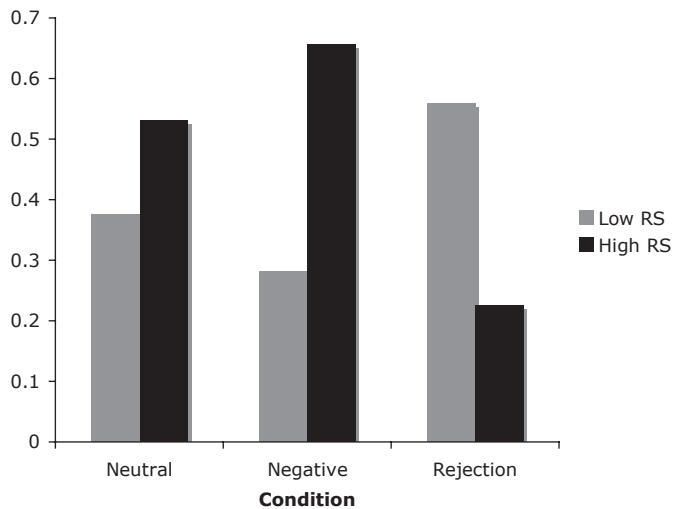
**Preliminary Analyses.** RS did not differ significantly across conditions,  $F(2, 77) = 1.08, p = .34$ , nor did depressive symptoms or history of self-directed hostile cognitions ( $ps > .39$ ), indicating that random assignment to condition was successful in this study.

**IAT (Self-Directed Hostile Cognitions).** IAT scores did not differ significantly by condition,  $F(80, 2) = 0.03, p = .97$ . In the rejection condition,  $M = 0.43, SD = 0.42$ ; in the negative,  $M = 0.44, SD = 0.40$ ; in the neutral,  $M = 0.45, SD = 0.35$ .

Next, to examine whether the effect of condition on IAT score was moderated by RS, we conducted pairwise comparisons between the three conditions using the procedures described in Study 2. Significant interactions emerged in the comparison between the rejection and negative conditions,  $\beta = 0.55, t(74) = 3.20, p = .002, f^2 = 0.14$ , and between the rejection and neutral conditions,  $\beta = 0.36, t(74) = 2.18, p = .033, f^2 = 0.06$  (see Figure 2). The comparison between the negative and neutral conditions was not significant,  $\beta = -0.16, t(74) = -1.08, p = .28$ .

Within the rejection condition, RS marginally significantly predicted lower IAT scores (i.e., greater self-directed hostile cognitions),  $\beta = -0.33, t(27) = -1.81, p = .08, f^2 = 0.12$ . Unexpectedly, within the negative condition, RS significantly predicted greater IAT scores (i.e., lower self-directed hostile cognitions),  $\beta = 0.47, t(27) = 2.75, p = .01, f^2 = 0.28$ . RS did not significantly predict IAT scores within the neutral condition,  $\beta = 0.25, t(20) = 1.16, p = .26, f^2 = 0.07$ . The crossover pattern between the rejection and negative conditions was not seen in other studies, and it is unclear why it emerged in this study.

Simple slope analyses revealed that high RS participants scored significantly lower on the IAT in the rejection condition compared to the negative condition ( $t = -2.67, p = .009, d = 0.71$ ) and marginally significantly lower compared to the neutral condition ( $t = -1.98, p = .052, d = 0.55$ ). Low RS participants scored significantly higher in the rejection condition compared to the negative condition ( $t = 2.07, p = .042,$



**Figure 2** Study 3: Interaction between RS and condition predicting IAT score. RS = rejection sensitivity; IAT = Implicit Association Test. Lower IAT scores indicate greater self-directed hostile cognitions.

$d = 0.55$ ), but their scores did not significantly differ between the rejection and neutral conditions ( $t = 1.19, p = .24, d = 0.33$ ).

To examine whether the RS  $\times$  Condition interaction remained a significant predictor of IAT score when controlling for depressive symptoms, history of self-directed hostile cognitions, and general hostility, we entered these variables as predictors in the regression equation described above. The RS  $\times$  Condition interaction remained significant for the comparison between rejection and negative,  $\beta = 0.56, t(71) = 3.27, p = .002, f^2 = 0.14$ , and the comparison between rejection and neutral,  $\beta = 0.38, t(71) = 2.20, p = .031, f^2 = 0.06$ .

## STUDY 4

In Study 3, we found that high RS participants exposed to a subliminal rejection prime showed greater implicit self-directed hostile cognitions than participants low in RS, and we again found that this relationship was independent from depressive symptoms, history of self-directed hostile cognitions, and general hostility. In Study 4, we had two central goals. First, we wanted to examine whether the link between RS and self-directed hostile cognitions would extend to more concrete behavioral motivations, operationalized as willingness or desire to experience physical pain (using a measure adapted from Hooley, Ho, Slater, & Lockshin, 2010). Participants were not given the opportunity to inflict actual pain on themselves because our research question was focused primarily on self-directed hostile cognitions, affect, and behavioral intentions rather than overt self-injurious behavior, and because the potential additional information gained from a behavioral task did not seem warranted by the physical and psychological discomfort vulnerable participants might be led to experience as a result.



## Method

**Participants.** One hundred fifty-three undergraduates participated in a two-session study for course credit or monetary compensation. Due to a manipulation check failure in what was intended to be the neutral control condition in this study (i.e., high RS participants reported feeling nearly as rejected in the neutral condition, which involved writing about their typical commute or walk to campus, as they did in the rejection condition: neutral  $r = 0.31$ ,  $p = .048$ ; rejection  $r = 0.46$ ,  $p = .002$ ; negative  $r = 0.06$ ,  $p = .71$ ), we focused our analyses only on participants randomly assigned to the rejection and negative control conditions only ( $n = 98$ ).<sup>4</sup> Of this group, six cases were excluded from the negative control condition because participants wrote about experiences that were explicitly related to rejection or loss, and three cases were excluded in the rejection condition that described program application rejection rather than social rejection. Of the remaining 89 participants (65% female;  $M_{\text{age}} = 20.31$  years;  $SD = 2.50$  years), 63% were Asian American, 17% European American, 11% Latino/a, 5% Middle Eastern, and 4% other or missing.

**Preliminary Surveys.** In an initial survey session, which preceded the experimental session by at least one day, participants completed the same measures of depressive symptoms ( $\alpha = .90$ ;  $M = 14.49$ ,  $SD = 9.25$ ) and history of self-directed hostile cognitions ( $M = 1.32$ ,  $SD = 0.82$ , 15 participants gave frequencies greater than “never”; log transformed to correct right-skew) as in Studies 2 and 3, and the same 18-item rejection sensitivity measure used in Studies 1 and 2 ( $\alpha = .88$ ;  $M = 10.01$ ,  $SD = 3.56$ ).

**Experimental Session.** In the experimental session, participants completed computer-based tasks and questionnaires in a private cubicle. Participants were randomly assigned via a computer program’s randomization software to one of two conditions: rejection ( $n = 44$ ) and negative control ( $n = 45$ ). Experimenters were again blind to condition.

In the rejection condition, a computer task instructed participants to vividly recall a recent experience when they were rejected by a friend, a romantic partner, or a group of people and write about it for 2 minutes. In the negative control condition, participants were instructed to vividly recall a recent experience when they felt physically disgusted or sick to their stomachs (i.e., “grossed out”), such as smelling moldy leftovers or seeing someone vomit. This control condition was used in place of the fear control condition used in Study 2 in order to compare rejection to a different type of negative experience that should have less potential overlap with rejection.

**Manipulation Check.** Immediately following the recall task, participants were instructed to rate on a 5-point scale (1 = *Not at all*, 5 = *A lot*) how much they felt rejected ( $M = 2.10$ ,  $SD = 1.14$ ).

**General Hostility.** The same items from Study 3 (i.e., hostile, angry, irritable) were used to assess post-manipulation hostility ( $\alpha = .80$ ,  $M = 2.00$ ,  $SD = 0.87$ ).

**Self-Directed Hostile Cognitions.** Self-directed hostile cognitions were operationalized as willingness to experience physical pain as part of an ostensible upcoming perception task. This task was adapted from a pain tolerance task used in prior research to assess nonsuicidal self-injury ethically in the laboratory (Hooley et al., 2010). Our adapted task differs from tasks used in prior research in that it does not involve having participants actually self-administer a painful stimulus, but rather assesses their anticipated behavior. In the context of an anticipated pressure perception task, participants were asked to select the time point (in seconds) at which they would expect to experience physical pain, as well as the time point (in seconds) at which they would want to end the task. Desired pain length was computed by subtracting the latter (desired task length) from the former (pain threshold). The response scale ranged from 0 to 100 seconds, and 20 seconds was given as an anchor for the point where the average person experiences physical pain so that participants would share the same anchor, but pain duration scores were computed relative to participants’ own ratings of expected pain threshold. The task was framed to eliminate concerns that choosing a low desired pain length would interfere with the goals of the study or affect compensation.

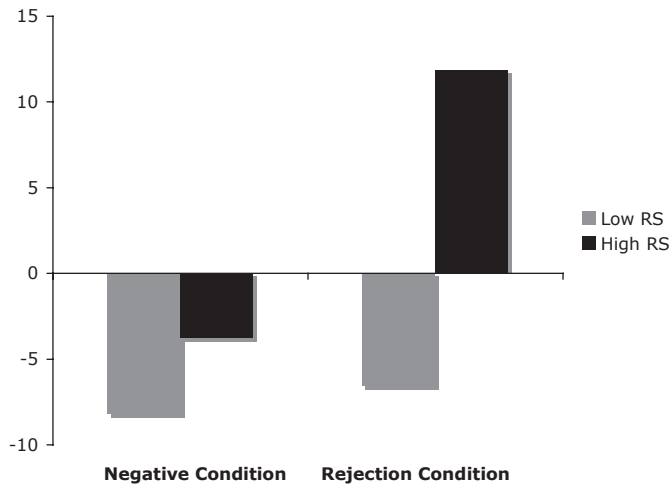
On average, participants preferred to end the task just before they believed that they would begin to experience pain ( $M = -2.89$ ), but there was substantial variability in participants’ responses ( $SD = 20.64$ ).

## Results

**Manipulation Check.** A test of the manipulation check revealed that participants in the rejection condition reported feeling significantly more rejected ( $M = 2.57$ ,  $SD = 1.30$ ) than those in the negative control condition ( $M = 1.64$ ,  $SD = 0.71$ ),  $F(1, 87) = 17.37$ ,  $p < .001$ ,  $d = 0.89$ . RS did not differ significantly between conditions,  $F(1, 87) = 1.05$ ,  $p = .31$ , nor did depressive symptoms or history of self-directed hostile cognitions ( $ps > .3$ ), indicating that random assignment to condition was successful.

**Self-Directed Hostile Cognitions (Desired Pain Length).** Desired pain length (i.e., desired task length relative to anticipated pain threshold) did not differ significantly across conditions,  $F(1, 87) = 2.16$ ,  $p = .15$ ,  $d = 0.31$ . On average, participants in the rejection condition scored slightly but not significantly higher ( $M = 0.55$ ,  $SD = 20.95$ ) than those in the negative condition ( $M = -5.84$ ,  $SD = 20.05$ ).

To assess whether the effect of condition on desired pain length was moderated by RS, we conducted a series of regression analyses. We created one effects-coded condition variable, where 1 represented the rejection condition and -1 represented



**Figure 3** Study 4: Interaction between RS and condition predicting desired pain length. RS = rejection sensitivity.

the negative control condition. We then mean-centered RS and created an interaction term for RS by condition. We conducted a linear regression analysis with desired pain length as the dependent variable. We included RS, the effects-coded condition variable, and the interaction term for RS  $\times$  Rejection Condition as predictors.

The RS  $\times$  Condition interaction was nonsignificant,  $\beta = 0.12$ ,  $t(85) = 1.08$ ,  $p = .28$ ,  $f^2 = 0.01$ , but its pattern was consistent with the hypotheses (see Figure 3); therefore, we further explored this pattern. Within the rejection condition, RS significantly predicted greater desired pain length,  $\beta = 0.38$ ,  $t(42) = 2.63$ ,  $p = .012$ ,  $f^2 = 0.17$ , but this was not the case within the negative control condition,  $\beta = 0.08$ ,  $t(43) = 0.55$ ,  $p = .59$ ,  $f^2 = 0.01$ . Furthermore, simple slope analyses revealed that high RS participants reported marginally significantly greater desired pain length in the rejection condition compared to the negative condition ( $t = 1.97$ ,  $p = .052$ ,  $d = 0.42$ ), whereas low RS participants did not report differences in desired pain length between conditions ( $t = 0.35$ ,  $p = .73$ ,  $d = 0.08$ ).

**Covariate Analyses.** To examine the role of RS  $\times$  Condition interaction in predicting desired pain length when controlling for depressive symptoms, history of self-directed hostile cognitions, and general hostility, we entered these variables as predictors in the regression equation. With covariates included in the model, the RS  $\times$  Condition interaction became marginally significant,  $\beta = 0.35$ ,  $t(82) = 1.91$ ,  $p = .06$ ,  $f^2 = 0.04$ , with high RS participants reporting significantly greater self-directed hostile cognitions in the rejection condition compared to the negative condition ( $t = 2.97$ ,  $p = .006$ ,  $d = 0.64$ ), and low RS participants again showing no differences between conditions ( $t = 0.13$ ,  $p = .90$ ,  $d = 0.03$ ). These covariates may have served to reduce variability in desired pain length ( $SD = 20.67$ ) unrelated to the rejection manipulation, allowing us to detect

the hypothesized interaction. For example, a subset of participants reporting high desired pain length in the rejection condition may have also reported high desired pain length in control conditions, due to a general tendency to experience self-directed hostile cognitions not specific to rejection. Controlling for history of self-directed hostile cognitions, then, may have helped reveal the specific association between RS and self-directed hostile cognitions following rejection.

## DISCUSSION

As a whole, these findings are consistent with previous research demonstrating that RS represents a unique vulnerability for a number of maladaptive cognitions and behaviors following interpersonal rejection (Downey & Feldman, 1996), and they extend this research to an important domain, self-directed hostile cognitions. Self-directed hostile cognitions are predictive of self-harmful behaviors, such as nonsuicidal and suicidal self-injury (e.g., Nock et al., 2009), which are prevalent and potentially life-threatening (e.g., Lloyd-Richardson, Perrine, Dierker, & Kelley, 2007). Although significant advances have been made in the study of self-injury, little is known about interactions between dispositional factors and proximal situational triggers. The present research sought to begin to fill that gap by examining situation-specific vulnerability to self-directed hostile cognitions among high RS individuals.

Our findings have a number of implications for theory and research. Although previous research has focused on general hostility, our results suggest that it may be useful to also consider self-directed hostile cognitions, which appear to arise independently of general and other-directed hostility and may operate through different mechanisms. Whereas general hostility may be triggered primarily by general emotional reactivity or perceptions of others' hostile intentions, self-directed hostile cognitions may be more specifically related to perceived threats to self-image or self-worth.

Future research could also examine other factors that influence the likelihood that rejection will lead to self-directed hostility, other-directed hostility, or a combination of the two. For example, prior research suggests that rejection may trigger ingratiation rather than hostility when opportunities for acceptance are present (Romero-Canyas et al., 2010); in some cases, it is possible that such ingratiation may take the form of self-harm. Self- and other-directed hostility may also be influenced by temporal factors. Hostility may be more likely to be directed externally immediately following a rejection experience, but over time it may become more inward-focused. These questions are beyond the scope of the present research but represent important directions for future research.

Our findings also have implications for the prevention, detection, and treatment of self-injurious thoughts and behaviors. Interventions that target rejection-specific triggers may be particularly effective for high RS individuals. For example, high RS individuals who are at risk for self-injury may benefit

from interventions aimed at restoring self-worth following rejection and reappraising rejection in a way that makes it less self-threatening. In addition, high RS children and teens who experience peer rejection or frequent bullying may be at a greater risk for self-directed hostile cognitions and in extreme cases self-harmful or suicidal behavior. Identifying RS may be a tool for assessing the risk for these behaviors. Future research could also examine other dispositional factors that might interact with specific triggers to produce self-directed hostile cognitions, such as self-worth contingencies and domain-specific failures (Crocker & Wolfe, 2001).

The present studies have a number of limitations. First, participants were primarily college students with little history of self-harmful behavior. Interactions between RS and rejection may yield different patterns among younger adolescents and older adults, and among those with a history of self-injury. Future research is needed to examine this possibility. Second, we examined self-directed hostile cognitions rather than overt self-harmful behaviors. Although the former increases the risk of the latter, it is possible that self-directed hostile cognitions elicited by rejection in high RS individuals are less likely to lead to overt self-harmful behaviors than self-directed hostile cognitions elicited in other contexts and among other populations. Nonetheless, self-directed hostile cognitions that do not lead to self-harmful behavior may still adversely affect mental health and well-being. Third, the use of different dependent measures of self-directed hostile cognitions across the four studies could be considered a strength in terms of increasing generalizability, but it is also possible that these different measures captured different forms of self-directed hostile cognitions and could have reflected a range of motivations.

It is unclear what function self-directed hostile cognitions serve for rejection-sensitive individuals in the context of social rejection. Future research is needed to examine this question. Prior research suggests that nonsuicidal self-injury often serves an emotion regulatory function, reducing negative states and increasing positive states (Klonsky, 2007; Nock & Prinstein, 2004; Nock et al., 2009). In addition to serving emotion regulatory functions, self-directed hostile cognitions may serve to validate the self at times when self-esteem is threatened, such as in the context of social rejection. Choosing to experience pain or suffer harm may increase feelings of power, strength, or moral righteousness. Consistent with this idea, prior research shows that experiencing pain reduces individuals' feelings of guilt, presumably because pain signifies atonement and reestablishes a positive self-image (Bastian, Jetten, & Fasoli, 2011). Because prior research suggests that high RS individuals' self-concept is especially vulnerable to rejection-related threats (e.g., Ayduk et al., 2001, 2003, 2009; Purdie & Downey, 2000), self-directed hostile cognitions among these individuals may serve a self-validation function.

In summary, these findings shed new light on the role of rejection sensitivity in increasing the risk of self-directed hostile cognitions following rejection. Beyond contributing to

dysfunctional interpersonal behavior, rejection sensitivity may carry serious risks for the self. Self-directed hostile cognitions are not only psychologically distressing, but they may also increase the likelihood of self-harmful and suicidal behavior. Given the frequency and uncontrollability of rejection in people's everyday lives, it is important to find ways to reduce its destructive impact.

## Notes

1. Optimal sample size was estimated using the guidelines set forth by Cohen (1992). Based on prior related research (e.g., Ayduk et al., 2009), we anticipated large effect sizes for our primary analyses in Studies 2–4 and therefore aimed to include a minimum of 20 participants per cell within the RS  $\times$  Condition interaction (i.e., 40 participants per experimental condition). Sample size was constrained, however, by logistical considerations and limited availability of resources. In Study 1, we made use of an already existing dataset and therefore did not make sample size determinations.
2. Higher RS scores were also found in participants who reported feeling stomach pain, trouble falling asleep, feeling tense and anxious, feeling of doomsday, and an urge to escape ( $ps < .05$ ) following the negative interpersonal event. Trembling and headaches were marginally significantly related to RS. Controlling for these variables did not change the relationship between RS and urge to harm self. No significant differences in RS were found in reports of heart racing, dizziness, chest pain, hot or cold spells, pain in lower back, fatigue, poor appetite, rash or skin irritation, excessive sleep, urge to smoke, urge to eat, or urge to drink alcohol.
3. We also examined the effect of the RS  $\times$  Condition interaction on general and other-directed hostility to see whether it would replicate the pattern found in previous research. The interaction between RS and condition in Studies 2 and 3 was not significant for either comparison, though the pattern of simple slopes was consistent with prior research such that high but not low RS participants reported significantly greater general or other-directed hostility in the rejection condition compared to the negative and the neutral conditions. Replicating prior research more directly, the interaction between RS and condition predicting general hostility was significant in Study 4,  $\beta = 0.43$ ,  $t(85) = 2.63$ ,  $p = .01$ ,  $f^2 = 0.07$ , with only high RS participants reporting significantly greater general hostility in the rejection condition compared to the negative condition ( $t = 3.72$ ,  $p < .001$ ,  $d = 0.80$ ).
4. Consistent with the unexpectedly high levels of rejected feelings in what was intended as the neutral control condition, patterns of results for this condition were similar to those in the rejection condition. Desired pain length in the neutral condition ( $M = 0.61$ ,  $SD = 23.11$ ) was similar to that in the rejection condition. The RS  $\times$  Condition interaction comparing the rejection and neutral conditions was nonsignificant,  $\beta = 0.03$ ,  $t(81) = 0.02$ ,  $p = .83$ ,  $f^2 < 0.01$ . Within the neutral condition, as in the rejection condition, RS significantly predicted greater desired pain length,  $\beta = 0.36$ ,  $t(39) = 2.44$ ,  $p = .019$ ,  $f^2 = 0.15$ . Simple slope analyses revealed that level of RS did not predict desired pain length differences between the rejection and neutral conditions ( $ps > .2$ ).



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