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Links between rejection sensitivity and biobehavioral response to laboratory stress in youth

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Abstract

Although rejection sensitivity has been shown to predict altered psychological and relational well-being, a surprising dearth of research has examined physiological effects of this individual difference measure during childhood and adolescence. In the present research, we investigated the relationship between rejection sensitivity, negative affect, and sympathetic nervous system (SNS) response to laboratory performance stressors among youth. Thirty-two normally developing youth completed a modified version of the Trier Social Stress Task. Self-report measures of negative affect and salivary alpha amylase were collected over the course of the stress session. Controlling for gender, rejection sensitivity was related to greater negative affect and blunted alpha amylase reactivity. These data are the first to demonstrate that rejection sensitivity is associated with altered physiological stress response among youth. These findings also identify a plausible psychobiological mechanism that could provide new insight into why rejection sensitivity is a vulnerability factor for suboptimal academic performance in childhood and adolescence.

Keywords

rejection sensitivity; alpha amylase; negative affect; stress; child; adolescent

1. Introduction

Developing a strong sense of self-worth is one of the key psychosocial projects of youth (e.g., Bowlby, 1969). In an attempt to protect their emerging sense of self, some youth develop rejection sensitivity, a chronic tendency to readily perceive, anxiously expect, and

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over-react to social rejection (Downey & Feldman, 1996). Although this defensive motivational system helps individuals to quickly identify and avoid new social threats, it can also cause increased negative affect and interpersonal conflict (see Downey, Irwin, Ramsay, & Ayduk, 2004; Romero-Canyas, Downey, Berenson, Ayduk, & Kang, 2010 for reviews).

While the psychological and relational costs of rejection sensitivity have received considerable empirical attention, the potential physiological costs of this perceptual lens have received comparatively less. In situations that require goal-directed behavior (e.g., giving a public speech, completing a timed academic test), a robust sympathetic nervous system (SNS) response (i.e., increased respiration, blood circulation) is required in order to meet the demands of the task. However, when these tasks occur in social conditions where rejection is also possible, it is plausible that rejection sensitive youth might demonstrate altered physiological responses indicative of social threat rather performance challenge (Kassam, Koslov, & Mendes, 2009). In order to address this possibility, the current study examined the degree to which rejection sensitivity modifies emotional and sympathetic nervous system response to laboratory performance stressors in a sample of normally developing youth.

1.1 Rejection sensitivity increases perception of and reaction to subtle social threat cues

As a result of past social rejection, some children and adolescents develop the chronic tendency to readily perceive and anxiously expect cues that signal potential social rejection (Downey, Khouri, & Feldman, 1997; Feldman & Downey, 1994). This cognitive-emotional filter, termed *rejection sensitivity*, has been associated with greater perceptual attunement to subtle social rejection cues. For example, in a classical conditioning paradigm, emerging adults high in rejection sensitivity showed greater apprehension to an anticipated threat than emerging adults low in rejection sensitivity (Olsson, Carmona, Downey, Bolger, & Ochsner, 2013). Rejection sensitive emerging adults were also more likely to perceive social rejection in new romantic relationships. For example, when asked to imagine what they would think if their romantic partner began to spend less time with them, individuals high in rejection sensitivity were more likely to think their partner was rejecting them compared to individuals low in rejection sensitivity (Downey & Feldman, 1996). In other words, individuals with high rejection sensitivity are biased to perceive rejection in otherwise ambiguous social situations.

In addition to detecting a greater frequency of threats in their environment, rejection sensitive individuals also tend to experience more negative affect when they do identify potential threats. For example, in a social rejection paradigm developed by Downey and colleagues, children were asked to complete an interview with a study researcher at their school. In order to make the interview more enjoyable, each child nominated another classmate to join them in the interview room. After the researcher ostensibly asked the nominated classmate to join the child, the researcher informed each child that their classmate did not want join them in the interview room. Because they misinterpreted the social cue as a personal rebuff, youth high in rejection sensitivity experienced greater negative affect (i.e., anxiety, depressive symptoms; Downey et al., 1998) and observable distress (Gazelle & Druhen, 2009).

Rejection sensitivity is also theorized to magnify the response of physiological systems designed to detect and respond to social threats (Romero-Canyas et al., 2010), although only one study has examined this proposition. In a study designed to examine the association of rejection sensitivity and magnitude of the startle response (i.e., an automatic eye blink), Downey and colleagues asked emerging adults (aged 18-22) to view artwork that depicted either social rejection or social acceptance themes (Downey, Mougios, Ayduk, London, & Shoda, 2004). While viewing the artwork, participants also heard a loud white noise burst which activated their startle response. Results demonstrate that rejection sensitivity amplified the startle response when participants viewed rejection-themed artwork but not acceptance-themed artwork. In other words, when primed with a social threat, rejection sensitivity hypersensitized the body's ability to detect threat.

1.2 Rejection Sensitivity and Sympathetic Nervous System Activation in Response to Motivated Performance Threats

Although rejection sensitivity magnifies negative affect (Downey, Lebolt, Rincón, & Freitas, 1998b; Gazelle & Druhen, 2009) and the startle response (Downey et al., 2004) in response to social threat cues, no empirical research has examined the degree to which rejection sensitivity also modifies physiological stress responses. Given that considerable research has shown that social threats reliably activate physiological stress (Dickerson & Kemeny, 2004), research examining the possibility that rejection sensitivity is an individual difference capable of modifying these responses could make an important contribution to this field of research. Moreover, because the majority of existing research has examined the effect of rejection sensitivity in emerging adults (for reviews, see Downey, Irwin, et al., 2004; Romero-Canyas et al., 2010), comparatively less is known about the effects of rejection sensitivity in childhood and adolescence. Social and emotional regulation matures exponentially during this phase of life as does the concomitant neuronal structures and stress responses supporting these skills (Spear, 2013; Steinberg & Morris, 2001). Therefore, understanding whether and to what degree rejection sensitivity modifies negative affect and stress reactivity during this critical phase of development is of considerable importance to researchers and practitioners.

The purpose of the present study, therefore, is to examine the association between rejection sensitivity and SNS reactivity among youth. The modified Trier Social Stress Task for Children (TSST-C; Kirschbaum, Pirke, & Hellhammer, 1993; Kudielka, Hellhammer, & Kirschbaum, 2007) is a laboratory paradigm that reliably elicits stress reactivity in youth. In the modified TSST-C, youth are asked to prepare and give a speech, complete mental arithmetic, and trace a star while a set of two adult judges (i.e., trained research assistants) who maintained neutral nonverbal expressions throughout the procedures (Stroud et al., 2009).

In order to meet the demands of the modified TSST-C, the sympathetic nervous system (SNS)—one of the body's primary stress management systems—must release catecholamines into the bloodstream (Cannon, 1914). Previous research has demonstrated that alpha-amylase, an enzyme produced by the salivary glands, provides a reliable and non-invasive surrogate marker of SNS activity (Granger, Kivlighan, el-Sheikh, Gordis, & Stroud,

2007; Nater & Rohleder, 2009). Activation of the SNS serves to increase respiration in order to oxygenate the blood and circulate blood to the brain and peripheral muscles. Because of the increased blood flow, the central and peripheral nervous systems are able to function more effectively, focusing cognitive attention and directing muscular energy towards the environmental demand. As such, a typically-functioning SNS will rapidly and robustly increase reactivity in response to the modified TSST-C in order to mobilize youth to think clearly and act quickly so that they can complete the task effectively.

However, because the speech, arithmetic, and tracing tasks are accompanied by ambiguous social cues, rejection sensitive youth may interpret judges' neutral facial expressions and bodily postures as indicators of social rejection. Given that youth high in rejection sensitivity tend to misinterpret ambiguous social cues from peers as evidence of social rejection (Downey et al., 1998b; Gazelle & Druhen, 2009), it is plausible that they might also experience the TSST-C similarly. That is, because of their proclivity to perceive social rejection in otherwise ambiguous social cues, youth high in rejection sensitivity are likely to perceive the judges' ambiguous nonverbal cues as evidence of rejection. As a result, youth high in rejection sensitivity are also likely to experience blunted SNS reactivity. Although this hypothesis has not been directly examined, related research provides corroborating evidence. Emerging adults who completed the TSST and were given rejecting, rather than supportive, nonverbal feedback by their judges experienced greater psychological distress but blunted SNS reactivity in the form of reduced cardiovascular efficiency (Kassam et al., 2009). In other words, when emerging adult felt greater social threat than challenge, their bodies were less effective in mobilizing the physiological resources needed to meet the demands of the task.

Therefore, in the present research, we expect that youth exposed to the modified TSST-C who are high in rejection sensitivity will experience greater negative affect than youth low in rejection sensitivity. Moreover, we predict that rejection sensitivity will predict blunted SNS reactivity, as evidenced by lower salivary alpha amylase, a reliable measure of SNS activity (Granger et al., 2007; Stroud et al., 2009).

2. Method

2.1 Participants

Participants for the current study were a subset of 32 healthy youth (16 boys, 16 girls) aged 8 to 17 ($M = 12.81$, $SD = 2.71$) who participated as part of a larger study examining sex differences in stress response across puberty (Stroud, Papandonatos, D'Angelo, Brush, & Lloyd-Richardson, 2017). The majority of participants identified their racial/ethnic background as Caucasian (19; 59.4%) with 25.0% Hispanic, 9.4% Asian, and 6.3% African American. Based on the Hollingshead Index of socioeconomic status (Hollingshead, 1975), 25% of the sample came from high SES households (Hollingshead=1), 50% were from middle SES households (Hollingshead = 2 or 3), and 25% were from low SES households (Hollingshead score = 4 or 5). Slightly less than half the sample reported being in late puberty (14; 43.8%), as indexed by self-reported Tanner criterion (Marshall & Tanner, 1969, 1970).

Participants were recruited through community and online postings to complete a child behavior study. Interested participants and parents were screened by telephone to determine study eligibility. Exclusion criteria were based on factors known to influence alpha amylase, including use of tobacco, drugs, alcohol, oral contraceptives, thyroid medications, steroids, and psychotropic medications (Granger et al., 2007; Stroud et al., 2017). Participants with a history of psychological or behavioral problems or current physical illnesses were also excluded from the study.

2.2 Procedure

Youth and their parents were first asked to attend a two-hour screening session to allow participants to habituate to the novelty of the laboratory setting and to complete individual difference measures. After obtaining informed consent from both parents and participants, participants watched a “G-rated” movies and television shows and also completed a battery of questionnaires including a measure of rejection sensitivity. Self-reported demographic and pubertal variables were also collected as potential covariates of alpha amylase reactivity: age, socioeconomic status (Hollingshead, 1975), race/ethnicity, and Tanner pubertal stage (Marshall & Tanner, 1969, 1970). To assess Tanner pubertal staging, participants were presented with sex-specific pictorial representations of pubertal development and were asked to select the breast and pubic hair (female) or genital and pubic hair (male) development that most closely matched their perceived pubertal stage. Mean scores were subsequently dichotomized into an early-mid/prepubertal stage (Tanner scores 1.0 to 3.4 = 0) vs. late/post-pubertal stage (Tanner scores 3.5 to 5.0 = 1).

Then, youth and their parents returned to the lab approximately two weeks later and completed the stressor session. Participants were asked to refrain from food and drink (besides water), exercise, and caffeine at least 1 hour prior to the session, and all sessions began between 2:00 and 5:00pm. Participants completed a two-hour modified Trier Social Stress Test for Children (TSST-C; Buske-Kirschbaum et al., 1997) which acted as our performance stressor. After completing a 30-minute baseline period in which participants watched G-rated movies and television shows, participants were asked to do their best to complete three performance tasks: 1) a 10-minute public speaking task, in which participants were given five minutes to prepare, then were asked to speak on academic topics (e.g., English, Science, History) for five minutes, with difficulty adjusted based on participant age; 2) a five-minute mental arithmetic task in which participants were asked to complete serial subtraction under time pressure, with difficulty adjusted based on participant age and performance; and 3) a five-minute mirror star tracing, adapted from Allen and Matthews (1997) in which participants traced the figure of a six-sided star while viewing only its mirror image using a mirror star tracing apparatus (Layfayette Instruments, 1987) with errors counted and marked by sound and light. All tasks were performed before a two-member adult audience (i.e., trained research assistants) who maintained a neutral demeanor and wrote evaluative notes on a clipboard. These three stressors were followed by a 60-minute recovery period. In order to assess psychological and physiological stress reactivity, self-reported affect and saliva samples were assessed multiple times throughout the stress task. Following study completion, participants and their parents were debriefed and were

compensated for their time. Protocols and procedures were approved by Lifespan Hospital's Institutional Review.

2.3 Measures

2.3.1 Rejection Sensitivity.—The Child Rejection Sensitivity Questionnaire¹ (Downey et al., 1998a) was used to assess participants' anxious reactions to imagined social situations. Participants were presented with six vignettes which each depicted an ambiguous social situation (e.g., "Imagine that you're in class. Your teacher asks for a volunteer to help plan a party for your class. Lots of kids raise their hands so you wonder if the teacher will choose YOU.") Three vignettes displayed social situations with a teacher and three displayed social situations with peers. Following each vignette, participants were asked to indicate the degree to which they would expect to feel anxious ("How NERVOUS would you feel, RIGHT THEN, about whether or not your friend will want to talk to you and listen to your problem?"; $1 = \text{not nervous}$, $6 = \text{very, very nervous}$) and to be rejected ("Do you think he/she will want to talk to you and listen to your problem?"; $1 = \text{yes!!!}$, $6 = \text{no!!!}$). A composite Anxious RS score was created by multiplying the nervousness rating by the rejection rating for each vignette and then creating an omnibus mean score representing the propensity for anxious rejection expectations. Consistent with previous research (e.g., Downey et al., 1998; McCarty et al., 2007), the scale demonstrated acceptable internal reliability in this sample ($\alpha = .72$).

2.3.3 Negative Affect.—Participants were asked to complete a mood measure adapted from the State-Trait Anxiety Inventory for Children (STAI-C) (Spielberger et al., 1973) at six points corresponding to the following: baseline, after the speech task, after the math task, after the star tracing task, eight minutes after TSST-C cessation, and 16 minutes after TSST-C cessation (see Figure 1). At each time point, participants were asked to report on their feelings of being "upset," "nervous," "sad," and "scared" on 100 mm "thermometer" visual analogue scales. The measures included emotion faces at the extremes each adjective's scale to assist participants in anchoring high and low levels of each emotion. Items were combined to create a mean score at each of the six time points, each of which demonstrated good internal consistency (α s from .68 to .91). We then calculated the area under the curve (AUC) based on these six means using the trapezoidal rule (Pruessner et al., 2003; Fekedulegn et al., 2007), a measure frequently used in physiological stress research to assess overall reactivity to a stressor.

2.3.4 Salivary alpha-amylase (sAA).—sAA was used as a biomarker of SNS reactivity. Participants provided six whole, passive drool saliva samples over the course of the stressor corresponding to: 1) 20 minutes into the baseline rest period, 2) after the 10 minute speech preparation and delivery, 3) after the five-minute math task, 4) after the five-minute star-tracing task, 5) eight minutes after TSST-C cessation, and 6) 16 minutes after TSST-C cessation (see Figure 1). Following collection, samples were frozen at -80 degrees Celsius until shipment on dry ice to the laboratory of Clemens Kirschbaum, Ph.D. (Dresden

¹We utilized the original version of the Child Rejection Sensitivity Questionnaire (Downey et al., 1998a) which includes an Anxiety and an Anger subscale. Consistent with previous research, we only report the results of the Anxiety subscale here. The Anger subscale was unrelated to study outcomes, all $ps > .15$.

University), where sAA assays were conducted. Concentration of sAA was measured using an enzyme kinetic method reaction assay that employs a substrate reagent (a-amylase EPS Sys: Roche Diagnostics, Mannheim, Germany). The enzymatic action of sAA on this substrate yields 2-chloro-p-nitrophenol, which can be spectrophotometrically measured at 405 nm using a standard ELISA reader (Anthos Labtech HT2, Anthos, Krefeld, Germany). The amount of sAA activity present in the sample is directly proportional to the increase (over a 2 minute period) in absorbance at 405 nm. Intra and inter-assay coefficients of variation were less than 10 and 12%, respectively. Like negative affect, sAA reactivity was calculated by utilizing area under the curve (AUC) calculated using the trapezoidal rule (Pruessner et al., 2003; Fekedulegn et al., 2007).

2.4 Data Analyses

2.4.1 Missing data.—Across all collected data, two participants had one missing item of six possible items from the CRSQ, and two participants had one missing sample of six possible sAA samples (i.e., <0.001% of total data were missing). All data were missing completely at random, Little's test $\chi^2(68) = 62.00, p = .68$. Because listwise deletion, mean imputation based on sample estimates, and other missing data strategies bias parameter estimates, we opted to use item-level multiple imputation in order to obtain item-level estimates that better reflect the population (Graham, 2009). Information from the six CRSQ items and the six sAA time points was used to generate 20 estimates of these four missing items. These estimates were then pooled into one estimate for each item and imputed to replace the four missing items before calculating the CRSQ mean and sAA AUC.

2.4.2 Normality.—Kolmogorov–Smirnov test and graphical inspection using Quantile–Quantile plots were used in order to assess normality of rejection sensitivity, Negative Affect AUC, sAA AUC. The test and plots indicated significant deviations from normality for sAA AUC only. The following analyses were, therefore, conducted with log-transformed sAA AUC values which resulted in normally distributed data.

2.4.3 Analytical approach.—A series of hierarchical linear regressions were used to examine the effect of rejection sensitivity on negative affect AUC and sAA AUC. Correlations between personal characteristics known to affect sAA were examined (e.g., gender, pubertal status; (van den Bos, de Rooij, Miers, Bokhorst, & Westenberg, 2014) and were controlled for at Step 1 of the regression analyses if correlations were $p < .10$. Additionally, Time 1 levels of all variables were also entered at Step 1 in order to control for baseline levels.

3. Results

We first examined correlations between demographic characteristics of gender (0 = male; 1 = female), race (0 = Caucasian; 1 = Hispanic/Asian/African-American), socioeconomic status (Hollingshead Index 1 and 2 = 0, Hollingshead Index 3–5 = 1), age, and Tanner Stage (Tanner scores 1.0–3.4 = 0; Tanner scores 3.5–5.0 = 1) and outcome variables of negative affect AUC and sAA AUC. Only gender was significantly associated with negative affect AUC ($r = .36, p = .04$) and marginally associated with sAA AUC ($r = -.27, p = .13$) such that

females experienced greater negative affect but lower sAA in response to the performance task. All other correlations were nonsignificant.

As shown in Table 1, controlling for gender, we found support for our hypothesis that increased RS was associated with greater negative affect AUC, $B = 38.72$, $SE = 17.39$, $p = .03$, 95% CI: 3.08, 74.35, but lower sAA AUC, $B = -.02$, $SE = 0.007$, $p = .05$, 95% CI: $-.03$, $-.01$. As depicted in Figure 2, greater rejection sensitivity was associated with greater negative affect AUC. In particular, increased rejection sensitivity was associated with increased negative affect over the course of the task, while decreased rejection sensitivity was associated with increased negative affect only at the first TSST-C task. In contrast, as depicted in Figure 3, greater rejection sensitivity was associated with blunted sAA reactivity. Specifically, higher RS was associated with attenuated sAA over the course of the session and prolonged sAA recovery following the stressors Please see Table 1 for full results.

4. Discussion

Although rejection sensitivity has been theorized to modify the response of physiological systems designed to detect and respond to social threats (Romero-Canyas et al., 2010), a surprisingly limited number of studies have examined this possibility. In order to address this gap, we examined negative affect and salivary alpha amylase reactivity to a modified TSST-C, a laboratory stressor that requires youth to pursue goal-directed performance behaviors while receiving socially ambiguous cues. Consistent with hypotheses, rejection sensitivity predicted greater negative affect but blunted sAA reactivity in a sample of normally developing youth. In other words, youth with a proclivity to perceive ambiguous social cues as personal rebuffs showed alterations in the physiological resources needed to respond to this performance task.

The present findings replicate and extend prior research demonstrating that rejection sensitive youth evince greater negative affect in situations where social rejection could be expected or is directly experienced. During the course of daily life, youth encounter a multitude of verbal, nonverbal, and behavioral cues from peers that could be interpreted as affirmations of, as rejections of, or as unrelated to their current self-worth and social standing. Rejection sensitive youth are simply more likely to misperceive these cues as evidence of social rejection and to respond to them with greater feelings of sadness and anxiety (Downey et al., 1998a; Gazelle & Druhen, 2009). Moreover, our data also suggest that feelings of distress last longer for these youth. Whereas previous studies have primarily demonstrated these effects in situations where social rejection cues come from close peers, the present study replicates and extends replicates these effects to situations where ambiguous social cues come from adult evaluators to which they were previously unacquainted.

Importantly, the present research is the first known study to demonstrate that rejection sensitivity is associated with blunted salivary alpha amylase in a goal-directed performance task. Previous research demonstrates that rejection sensitivity magnifies the startle response when exposed to social rejection cues (Downey, Mougios, et al., 2004), suggesting that this individual difference could mobilize an adaptive nervous system function. What remained

unclear, however, was whether rejection sensitivity could also reliably and adaptively modify sympathetic nervous system activation. In the modified TSST-C paradigm, youth must prioritize task completion goals over social threat detection goals, which requires them to mobilize a robust SNS response in order to meet the demands of the task. However, the present findings suggest that rejection sensitivity could be maladaptive in that it blunts SNS reactivity. These data, therefore, corroborate previous findings showing that emerging adults evince blunted SNS reactivity when they complete the TSST in the context of socially rejecting cues (Kassam et al., 2009).

The findings of the present research should, however, be considered in the context of several methodological limitations. Due to ethical concerns, youth with a history of psychopathology were excluded from study participation in order to prevent extreme deleterious responses to the social stressor. Because these experiences appear to precede the development of rejection sensitivity, the strength of the effects evinced among our sample of normally developing youth likely offer a conservative test of our hypotheses. Relatedly, although we were able to control the stressor in the laboratory, we could not experimentally manipulate rejection sensitivity or the exogenous trauma and severe social rejection purported to generate rejection sensitivity. Thus, these data represent correlational relationships, and causality cannot be inferred. Finally, because our analyses relied upon a relatively small and ethnically homogenous sample of youth, future research is needed to corroborate the generalizability of the present findings.

Despite these limitations, the current research has important implications researchers and practitioners who seek to understand the concomitant vulnerabilities of rejection sensitivity and intervene to reduce them. Rejection sensitivity has been prospectively linked with less engagement and lower grades among fifth-, sixth-, and seventh-graders, and it has been suggested that interpersonal conflict in school as an underlying source of these suboptimal academic effects (Downey et al., 1998a). However, to the extent that the modified TSST-C acts as a laboratory analog of the types of tasks students complete in their everyday school settings (e.g., state standardized assessments, written reports, class presentations), the present research points to an additional mechanism. Because prior research has shown that blunted SNS predicts poorer TSST performance among emerging adults (Kassam et al., 2009), the present findings could suggest that rejection sensitive students might simply be less likely to mobilize the physiological resources required to perform effectively on academic performance tasks. Future research is needed to directly test this possibility.

Maintaining a positive sense of self is a central motivation of human behavior, particularly among youth (e.g., Bowlby, 1969). Although rejection sensitivity emerges in an attempt to defend the integrity of the self, the present findings suggest that it can modify emotional and sympathetic nervous system responses to a goal-directed stressor. Indeed, as Romero-Canyas and colleagues have suggested, rejection sensitivity can “become maladaptive... when efforts to prevent rejection undermine other goals” (pg. 125, 2010). The present study provides a novel test of this premise, suggesting that the self-protective benefits of rejection sensitivity might derail physiological efforts to meet concomitant goals.

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Highlights

- Normally developing youth completed a modified Trier Social Stress Task
- RS predicted greater negative affect but blunted alpha amylase reactivity
- Findings are first to demonstrate physiological stress responses associated with RS

Figure 1. Timing of adapted TSST-C performance task, negative affect (NA), and salivary alpha amylase (sAA) measures.

Figure 2.

Negative affect reactivity to the adapted TSST-C as a function of rejection sensitivity. Although rejection sensitivity was modeled as a continuous variable in the statistical analyses, for ease of visual display, results are presented utilizing a median split on the rejection sensitivity variable (Low RS: ≤ 7.93 , High RS: > 7.93).

Figure 3.

Log salivary alpha amylase reactivity to the adapted TSST-C as a function of rejection sensitivity. Although rejection sensitivity was modeled as a continuous variable in the statistical analyses, for ease of visual display, results are presented utilizing a median split on the rejection sensitivity variable (Low RS: 7.93, High RS: > 7.93).

Table 1

Effect of Rejection Sensitivity on Negative Affect AUC and sAA AUC (N = 32)

	Negative Affect AUC			sAA AUC		
	B (SE)	95% CI	P	Model Fit	B (SE)	95% CI
Step 1				$F(2,29) = 5.20$, $p = .01$, $r^2 = .26$		
Constant	539.09(119.41)	294.86, 783.32	<.001		2.49 (0.12)	2.32, 3.01
Gender	333.53 (139.64)	47.93, 619.13	.02		-0.14 (0.05)	-0.05, -0.27
Time 1	28.95 (12.67)	3.03, 54.87	.03		0.67 (0.06)	0.55, 0.80
Step 2				$F(3,28) = 5.59$, $p < .01$, $r^2 = .38$		
Constant	234.62(176.81)	-127.57, 596.80	.20		2.71 (1.62)	2.38, 3.04
Gender	289.16(132.51)	17.74, 560.59	.04		-0.13 (0.05)	-0.22, -0.04
Time 1	28.36(11.89)	3.99, 52.72	.02		0.61 (0.07)	0.47, 0.75
RS - Anxiety	38.72(17.39)	3.08, 74.35	.03		-0.02 (0.007)	-0.03, -0.01

Note. Gender (0 = male; 1 = female).