

**DISCREPANT SELF-ESTEEM, EGO THREAT, AND RISK-TAKING**

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### Abstract

Current research challenges the notion that self-esteem can be conceptualized on a single dimension with the extremes of “high” and “low.” This study examined the association between self-esteem discrepancy (the high explicit self-esteem, low implicit self-esteem subtype) and behavioral risk-taking following an ego threat manipulation. Given research showing that people with discrepant self-esteem are particularly sensitive to ego threat, the hypothesis of this study was that following the threat manipulation, participants with discrepant self-esteem would engage in riskier behavior than would participants with secure self-esteem. Participants completed a verbal task similar to the GRE verbal section, and received false feedback, either positive or negative, regarding their performance on the task. Then participants completed a gambling task, which assessed behavioral risk-taking. Before and after the threat manipulation, and after the gambling task, participants’ emotional and physiological states were assessed via a mood measure and heart rate readings. Results of this study showed that for men, but not for women, self-esteem discrepancy was associated with risk-taking behavior following threat. In addition, among participants of both genders, those with discrepant self-esteem were less likely to report negative moods following threat. The results of this study suggest that people with discrepant self-esteem are unlikely to report negative moods following threat, and that men with discrepant self-esteem tend to respond to threat through risk-taking behavior.

### Discrepant Self-Esteem, Ego Threat, and Risk-Taking

Self-esteem, and specifically methods to increase low self-esteem, has been a topic of concern in contemporary popular psychological literature. Researchers have sought to employ self-esteem improvement techniques in order to reduce risky behaviors such as pregnancy and substance abuse, and have conducted research under the premise that low self-esteem, as operationalized by scores on self-report questionnaires, is the culprit for numerous negative outcomes (Baumeister, Campbell, Krueger, & Vohs, 2003; Levine, Majerovitz, Schnur, Robinson, & Soman, 2008). Explicit self-esteem, the type of self-esteem captured by self-report measures, has not been shown to predict high school performance, better relationships, ethical behavior, or low risky behavior (Baumeister et al., 2003). The fact that people with high self-esteem are not holistically better off than those with low self-esteem has motivated researchers to explore other methods of operationalizing self-esteem, which might predict variables of interest such as interpersonal success or risky behavior. These researchers contend that self-esteem cannot simply be conceptualized in terms of explicit measures of self-liking, such as self-reports (Greenwald & Banaji, 1995; Greenwald & Farnham, 2000; Kernis, 2003). Thus, research that relies solely on explicit assessments of self-esteem (e.g., Levine et al., 2008) omits relevant aspects of self-esteem that cannot be captured by self-report measures.

Given that current research supports the notion that self-esteem is more complex than the simplified, unidimensional conceptualization of “high” versus “low,” more researchers have begun to explore the many dimensions and operationalizations of self-esteem. Researchers posit that self-esteem can be conceptualized as secure or fragile, and that fragility of self-esteem can be operationalized in a number of ways. The aim of the present study was to examine the relationship between fragile self-esteem and risk-taking following ego threat.

### **Secure versus Fragile Self-Esteem**

People with secure self-esteem genuinely like themselves and have high explicit and implicit self-esteem; that is, people with secure self-esteem score high on both explicit self-esteem tests, such as deliberate, controlled self-report assessments, and implicit self-esteem tests that rely on automatic, uncontrolled processes (Greenwald & Farnham, 2000; Kernis, 2003). People with secure self-esteem also have realistic views of themselves, and are unlikely to self-aggrandize by holding unrealistically positive self-illusions (Kernis, 2003). Secure self-esteem is characterized by non-contingency and stability over time: People with secure self-esteem are less likely to base their self-esteem on certain outcomes, such as academic performance or relationships, and thus secure self-esteem remains stable over time (Kernis & Goldman, 2006; Paradise & Kernis, 2002).

In contrast to those with secure self-esteem, people with fragile self-esteem do not have genuine and stable feelings of self-worth. One of the fragile self-esteem subtypes is self-esteem discrepancy: People with discrepant self-esteem have differing levels of explicit self-esteem (as assessed through self-report questionnaires that involve deliberate, controlled processing) and implicit self-esteem (as assessed through indirect methods that involve automatic, uncontrolled processing; Greenwald & Farnham, 2000; Kernis, 2003). People with fragile self-esteem tend to defensively self-enhance; that is, they hold unrealistically positive illusions about the self (Kernis, 2003). In addition, people with fragile self-esteem often have contingent self-esteem; that is, they base their self-worth on certain outcomes, and consequently their self-esteem levels are unstable over time (Kernis & Goldman, 2006; Paradise & Kernis, 2002).

**Discrepant Self-Esteem: Conceptualization and Operationalization**

Discrepant self-esteem, one of the subtypes of fragile self-esteem, denotes high explicit and low implicit self-esteem (Greenwald & Banaji, 1995; Greenwald & Farnham, 2000).

Research has demonstrated not only that explicit and implicit self-esteem are distinct constructs that are not strongly associated with one another, but that people with discrepant self-esteem—that is, high explicit and low implicit self-esteem—display defensive behavior patterns and attributional styles (Greenwald & Banaji, 1995). People with discrepant self-esteem tend to protect their (explicitly) highly positive sense of self-worth by aggressively seeking ways to maximize positive and minimize negative self-referent information (Greenwald & Farnham, 2000, Kernis, 2003).

The implicit component of self-esteem has been operationalized in a variety of ways, all of which aim to conceptualize people's automatic evaluations regarding the self. Implicit self-esteem is a measure of non-conscious and overlearned associations between the self and positive constructs. In the social psychological literature, implicit information processing has been contrasted with explicit information processing: Implicit processing is automatic and occurs below the level of consciousness, whereas explicit processing is rational, deliberative, and conscious (Bosson, Swann, & Pennebaker, 2000). A commonly-used tool to measure implicit cognitions, the Implicit Association Test (IAT), has been used to assess a variety of constructs – inter-racial prejudice, sexist prejudice, and implicit self-esteem. In order to assess self-esteem, the IAT measures participants' automatic associations between self-referent and non-self-referent words and positive and negative words (Bosson et al., 2000; Greenwald & Farnham, 2000). Participants completing an IAT are instructed to quickly categorize words as either self-referent or non-self-referent, and as positive or negative. For several of the trials, the self-referent

and positive target word labels appear on the same side of the computer screen, and in other trials, the self-referent and negative target word labels appear on the same side of the computer screen. Participants sort these words based on the labels on the screen by pressing one of two keys, each key corresponding to a side of the screen. Participants' implicit self-esteem is computed as the difference between average response latencies for the *self-referent* and *positive* association trials and for the *self-referent* and *negative* association trials (Bosson et al., 2000). The IAT has been used frequently in self-esteem research, and has shown to have sufficient test-retest reliability and strong predictive validity (Greenwald & Farnham, 2000).

Other researchers have conceptualized implicit self-esteem via other methods. For example, researchers have considered participants' preferences for their own initials and digits in their own birthdays as a measure of implicit self-esteem (Bosson et al., 2000, Kernis, 2003, Koole, Sijksterhuis, & Van Knippenberg, 2001). In the Name Letter Task (NLT), which measures participants' preference for letters in their first and last names, participants rate their liking for all the letters in the alphabet. Researchers define implicit self-esteem as the difference between participants' average liking of their first and last initials and the average ratings of the same letters by participants without those initials in their names (Koole et al., 2001). This research also included a measure of implicit self-esteem involving digits represented in participants' birthday, which is correlated with ratings of initials in participants' names (Koole et al., 2001). The NLT shows strong test-retest reliability and has shown to be a valid measure of implicit self-associations (Bosson et al., 2000). However, name letter and birthday number rating measures of implicit self-esteem are not strongly correlated with other measures of implicit self-esteem, such as IAT scores (Bosson et al., 2000).

Similarly, other measures have been used to operationalize implicit self-esteem, but fail to correlate with other implicit self-esteem measures such as the IAT. For example, researchers assessed implicit self-esteem in terms of participants' speed of response on a Stroop color-naming task, in which participants chose the color in which positive self-statements (e.g., *I AM GREAT*) and negative self-statements (e.g., *I'M NO GOOD*) appeared on a computer screen (Bosson et al., 2000). Participants' implicit self-esteem was operationalized as longer response latencies on the positive self-statement trials as compared with the negative self-statement trials. However, implicit self-esteem as operationalized by the Stroop color-naming task was uncorrelated with implicit self-esteem as operationalized by the IAT, the initials-preference task, and birthday-preference task, indicating that the different measures of implicit self-esteem exhibit little convergent validity. Ultimately, given the lack of sustained empirical support for these other measures of implicit self-esteem, the measures of implicit self-esteem with the strongest test-retest reliability and predictive validity are the Name-Letter Task and the Implicit Association Test (Bosson et al., 2000; Greenwald & Farnham, 2000).

### **Negative Correlates of Discrepant Self-Esteem**

Discrepant self-esteem, that is, having differing levels of explicit and implicit self-esteem, is associated with a variety of negative interpersonal and intrapersonal correlates. These negative correlates of discrepant self-esteem are most apparent following ego threat, a threat to one's personal image or self-esteem, which magnifies the low implicit self-esteem of people with discrepant self-esteem (Leary, Terry, Allen, & Tate, 2009). This attack on self-esteem leads those with discrepant self-esteem to pursue methods of self-esteem restoration that manifest in interpersonal and intrapersonal ways.



**Interpersonal consequences.** Self-esteem discrepancy is associated with a variety of detrimental interpersonal consequences. Studies show that discrepant self-esteem predicts relational and physical aggression in children (Sandstrom & Jordan, 2008) and other hostility-related constructs in adulthood, such as suppressed anger (Schröder-Abé, Rudolph, & Schutz, 2007), in-group bias (Bosson, Brown, Zeigler-Hill, & Swann, 2003; Jordan et al., 2003), and lack of empathy (Eaton, Struthers, Shomrony, & Santelli, 2007).

Discrepant self-esteem also predicts stereotyping, which involves a process of self-worth bolstering through social comparison. Ego threat, in particular, heightens stereotyping among those with discrepant self-esteem. In a study by Jordan, Spencer, and Zanna (2005), participants were randomly assigned to receive either success or failure feedback on an academic task and then read a vignette depicting ambiguously aggressive behavior performed by either a minority or White student. As predicted, participants with discrepant self-esteem who received an ego threat recommended a harsher punishment for the minority student than for the White student than did participants with secure self-esteem. The researchers concluded that having discrepant self-esteem might encourage people to denigrate others in order to enhance the self.

**Intrapersonal consequences.** Self-esteem discrepancy is positively associated with suppressing anger and other negative emotions, and the suppression of negative thoughts has a variety of detrimental health outcomes (Petrie, Booth, & Pennebaker, 1998; Schröder-Abé et al., 2007). Consequently, people with discrepant self-esteem often experience poor physical and mental health (Schröder-Abé et al., 2007). Past studies have shown a variety of negative psychological correlates of discrepant self-esteem: Discrepant self-esteem is associated with body dysmorphic disorder, other eating disorders, and perfectionism (Zeigler-Hill, 2011). Additionally, among participants diagnosed with borderline personality disorder, those with

discrepant self-esteem displayed more severe symptoms of the disorder than did those with secure self-esteem (Vater, Schröder-Abé, Schütz, Lammers, & Roepke, 2010). Researchers suggest that the relationship between self-esteem discrepancy and mental health might be correlational, not causal, but nevertheless the two constructs are linked: Self-esteem discrepancy might cause people to have maladaptive intrapersonal or interpersonal processes and/or psychopathology might lead to the development of self-esteem discrepancy (Zeigler-Hill, 2011).

Taken together, these studies provide support for the notion that self-esteem discrepancy and mental health are intertwined. Indeed, an exemplar of self-esteem discrepancy is the narcissist, a person with inordinately high explicit self-esteem who uses a variety of methods to protect the self from inner feelings of self-doubt and self-dislike (Jordan, Spencer, Zanna, Hoshino-Brown, & Correll, 2003; Morf & Rhodewalt, 2001). This association between self-esteem discrepancy and narcissism is well-supported in the literature: People with discrepant as opposed to secure self-esteem exhibit greater narcissism (Jordan et al., 2003; Zeigler-Hill, 2011) and are also more likely to self-aggrandize and hold positive illusions about the self (Bosson et al., 2003). Furthermore, such narcissistic tendencies may be associated with poor mental health; one study showed a positive relationship between pathological narcissism and depressive temperament and anxiety (Tritt, Ryder, Ring, & Pincus, 2010).

Other research supports the notion that self-views influence mental health, although these influences may not be clearly captured through self-report measures due to self-presentational motivations. One study found that covert narcissists (characterized by defensiveness, hypersensitivity, and anxiety), but not overt narcissists (characterized by self-assuredness, aggressiveness, and exhibitionism) were more likely to be depressed than non-narcissists

(Watson, Sawrie, Green, & Arredondo, 2002). Due to the fact that narcissists who exaggeratedly self-aggrandize might be unlikely to report depression, the third part of this study included a behavioral report of depression assessed by clinicians, rather than a self-report of depression. The results of the third study showed that narcissism was associated with clinical assessments but not self-reports of depression (Watson et al., 2002). These results suggest that although depression may well be associated with narcissism, this relationship might be difficult to assess due to the self-presentational motivations of narcissism. Nevertheless, given the number of studies supporting the idea that discrepant self-esteem and psychological well-being are related, the connection between mental health and self-esteem discrepancy is an important avenue of research.

In conjunction with research supporting the association between narcissism and depression, research suggests that self-esteem discrepancy alone is associated with depression. For example, one study showed that, compared with people with secure self-esteem, people with discrepant self-esteem have a more depressive attributional style and poorer mental health outcomes (Schröder-Abé et al., 2007). In addition, a study showed that, compared with participants in a healthy control group, participants with recurrent depressive episodes had lower levels of implicit self-esteem (Risch, Buba, Birk, Morina, Steffens, & Strangier, 2010). Although this study did not include a measure of explicit self-esteem, the fact that low implicit self-esteem was associated with depression provides more support that implicit self-esteem should be considered in the context of mental health outcomes.

As shown above, people with discrepant self-esteem, due to their inability or unwillingness to recognize subconscious negative self-referent thoughts, engage in a variety of behaviors to bolster their sense of self-worth. These behaviors can be best understood in the

context of cognitive dissonance reduction: When people with discrepant self-esteem experience dissonance between their (perhaps subconsciously experienced) private cognitions and public acknowledgements of these cognitions, they are more likely than people with secure self-esteem to attempt to reduce this dissonance in order to maintain their state self-esteem. This tendency toward dissonance reduction has been empirically supported: People with discrepant self-esteem have a greater propensity to reduce cognitive dissonance compared with people with secure self-esteem (Jordan et al., 2003).

**Response to ego threat.** The interpersonal and intrapersonal consequences of discrepant self-esteem are most accentuated when people's sense of self-worth is threatened. In light of the research regarding defensive reactions to ego threat of people with discrepant self-esteem, numerous studies compare the emotional, physiological, and behavioral responses to ego threat of those with discrepant versus secure self-esteem. Ego threat is conceptualized as a threat to one's self-esteem, such as false negative feedback on a test or a social rejection (Leary et al., 2009). Empirically, there is evidence that ego threat tends to incite a variety of self-protective mechanisms in most people, such as social comparison and self-affirmation. These strategies enable people to protect and restore their sense of self-worth (Greenberg & Pyszczynski, 1985; Tesser, Crepaz, Beach, Cornell, & Collins, 2010). Much evidence supports the notion that people with discrepant self-esteem might be more likely to respond to ego threat with heightened self-protective mechanisms. Given their sensitivity to negative evaluation, due to the discrepancy between their explicit and implicit senses of self-worth, people with discrepant self-esteem might have a greater need to reaffirm and bolster self-esteem.

Research supports this tendency for those with discrepant self-esteem to be more sensitive to ego threat: In one study, participants with discrepant self-esteem were less likely to

attend to negative self-referent information, as operationalized by a faster reading of negative self-referent information than among participants with secure self-esteem (Schröder-Abé et al., 2007). This research suggests that those with discrepant self-esteem tend to avoid negative self-referent information because they seek to protect their fragile self-views. This finding is corroborated by evidence from other discrepant self-esteem research: Specifically, the findings of Borton, Crimmins, Ashby, and Ruddiman (2012) demonstrated that following an academic ego threat manipulation, participants with discrepant self-esteem were more likely to suppress thoughts about the threat and to punish themselves for thinking about the threat than were those with secure self-esteem. Taken together, these findings suggest that the explicitly negative self-referent information conveyed in ego threat (negative academic or social evaluation, for example) is particularly threatening to those with discrepant self-esteem, who are already hyper-aware of negative self-referent information.

People with discrepant self-esteem have also been shown to exhibit self-regulation failure following ego threat (Lambird & Mann, 2006). Lambird and Mann (2006) manipulated ego threat by giving participants false feedback on a test of creativity. Participants were then instructed to complete ten trials of a video game task, in which they were told they met certain performance criteria on three out of the ten trials. The dependent variable was the participants' willingness to bet that they would meet that same criterion on the eleventh trial. The results of this study showed that, following threat, those with discrepant self-esteem had lower payouts than those with secure self-esteem. The researchers concluded that ego threat especially inhibits self-regulatory means for those with discrepant self-esteem, and thus discrepant participants overestimated their abilities by making riskier bets.

Further research provided corroborating evidence that self-regulation, and specifically overestimating one's abilities, is related to self-esteem levels. In a study conducted by Smith, Norrell, and Saint (1999), participants who served in the military as cadets were given negative or positive false feedback on a leadership test. Further showing that high explicit self-esteem has numerous detrimental qualities, participants with high explicit self-esteem who experienced ego threat were more likely to overestimate their future abilities on a grenade-throwing task. Although this study did not include a measure of implicit self-esteem, it suggests that having high explicit self-esteem (the most common type of explicit self-esteem displayed by people with discrepant self-esteem) is associated with an overestimation of one's own future success. Baumeister, Heatherton, and Tice (1993) also found that participants with high explicit self-esteem were more likely to exhibit self-regulation failure (in the form of overestimation of abilities on a computer game task) than participants with low explicit self-esteem. Taken together, the findings regarding self-esteem and self-regulation support the notion that those with discrepant self-esteem might exhibit riskier behavior than those with secure self-esteem.

### **Self-Regulation and Risk Taking**

If the assumption that people with discrepant self-esteem have poorer self-regulation skills than those with secure self-esteem is valid, then it is relevant to consider the association between self-regulation and risk-taking. Past research supports the notion that self-regulation skills, which are closely connected with emotion regulation, affect gambling behavior. For example, in one study exploring the relation between emotion and risk-taking, experimenters manipulated emotion regulation, by either encouraging or discouraging participants to rely on emotions while making gambling decisions (Cheung & Mikels, 2011). The results of this study showed that participants in the emotion-regulation condition were less likely to gamble than

those in the emotion-focused condition, supporting the idea that reliance on emotion leads to riskier behavior.

More evidence corroborates this notion that self-regulation of emotion leads to riskiness: In a study conducted by Shead and Hodgins (2009), experimenters compared participants' expectations about the emotional consequences of gambling and risk-taking behavior. Participants who held expectations about the emotional results of gambling (either expecting that gambling would repair negative moods or increase positive moods), who were primed with ideas confirming their expectations about the emotional consequences of gambling, engaged in risky behavior. In contrast, those who did not hold strong expectations that gambling would affect mood (who thus did not rely as heavily on emotion) were not influenced by primes that suggested gambling's effect on mood. These findings suggest that beliefs about gambling's emotional consequences are related to gambling behavior, and thus this study further supports the link between emotional response and risk-taking.

This connection between emotion-regulation and risk-taking is further accentuated by ego threat, because ego threat poses a risk to self-regulatory means. For example, past research demonstrates that ego threat increases emotional and physiological responses and decreases valuable gambling-related skills. For example, in one study, researchers manipulated ego threat by informing participants that they would be delivering a speech, which represented a self-relevant stressor. The anticipation of giving a speech resulted in heightened physiological arousal and anxiety. Results also showed that participants in the anticipatory stress condition, as compared with those in the control condition, were slower to learn advantageous decision-making skills in a gambling task. These results point toward the notion that heightened

physiological and emotional responses to threat might affect gambling decisions and cause people to lack skills necessary to self-regulate and take fewer risks.

Given the tendency for those with discrepant self-esteem to respond to ego threats defensively, ego threat will likely induce greater risk-taking in participants with discrepant self-esteem in comparison to those with secure self-esteem. As suggested by prior research, this tendency may be due to the propensity of people with discrepant self-esteem to rely on emotions and to have poor self-regulation skills.

Past literature on risk-taking behavior has included several different risk-taking assessment tools, most involving real-life compensation for the experiment in order to increase the realism of the task. One such measure is the Balloon Analogue Risk Task (BART; Lejuez, Richards, Read, Kahler, Ramsey, Stuart, & Brown, 2002), an in-laboratory, behavioral measure of risk-taking in which participants can earn real money, thus encouraging them to take the task seriously and act in their best interest. The BART is reliable across time (White, de Wit, & Lejuez, 2008) and correlates highly with real-world self-reported risk constructs, including smoking, seatbelt use, alcohol use, illegal drug use, gambling, and unsafe sexual practices (Lejuez et al., 2002).

### **Emotion Regulation and Physiological Response to Ego Threat**

The research about risk-taking furthers the evidence for a connection between self-esteem and emotion regulation. This connection suggests the importance of considering discrepant self-esteem and ego threat together, given past research suggesting that those with discrepant self-esteem experience a more dramatic response to ego threat than do those with secure self-esteem, and that this differential response might have to do with reliance on emotion and deficiencies in self-regulation means. This idea is based upon the notion that those with discrepant self-esteem



are more easily threatened by negative self-referent information than are those with secure self-esteem (Kernis, 2003). Furthermore, the implicit negative self-feelings not manifested in self-reports could remain unexpressed in deliberative, controlled measures for two reasons: First, because they exist below the level of consciousness, unbeknownst to the person with discrepant self-esteem, or second, because the person with discrepant self-esteem experiences these negative self-feelings but chooses not to express them due to self-presentational motivations. This idea is based on research showing that implicit self-esteem predicts actual behavior, whereas explicit self-esteem predicts self-reported behavior (Rudolph, Schröder-Abé, Riketta, & Schutz, 2010). This research supports the notion that those with discrepant self-esteem might have behavioral responses that do not align with their self-reported responses. In sum, those with discrepant self-esteem might not know their true emotional states or might be dishonest about their true emotional states.

Given the self-presentational motivations that people with discrepant self-esteem people hold, it is likely that those with discrepant self-esteem will not acknowledge the emotional consequences of ego threat; in other words, they might be unlikely to report feeling sad, frustrated, or disappointed in themselves due to a public threat. Consequently, researchers must use assessment tools that are not susceptible to self-presentational motivations. For example, physiological measures, such as heart rate and blood pressure, are automatic; that is, people are unable to deliberately change these measures in order to minimize evidence of threat response. Thus, researchers have used physiological measures in conjunction with emotion measures because physiological measures can elucidate differential responses to threat and self-esteem bolstering techniques, such as risk-taking behaviors.

Researchers have used physiological measures to detect response to ego threat: For example, Spalding and Hardin (1999) considered physiological measures in a study exploring threat and anxiety. In this study, experimenters manipulated ego threat and measured self-reported anxiety, physiological indicators of anxiety, and observable anxious behaviors. The results showed that implicit self-esteem predicted behaviorally-expressed anxiety, whereas explicit self-esteem predicted self-reported anxiety. Consequently, this research demonstrates that those with high explicit/low implicit self-esteem are likely to misreport levels of anxiety while simultaneously exhibiting physiological responses indicative of anxiety. For this reason, physiological measures might provide an important window into the underlying mechanisms of response to ego threat among people with discrepant self-esteem.

Other studies further the support for a connection between ego threat and physiological response: For example, Jorgensen and Kolodziej (2007) assessed the cardiovascular reactivity (blood pressure and heart rate) of participants following an evaluative threat, in which participants were told that their performance on a story-telling task would be compared with that of mental health patients. The results showed that threat did, in fact, cause an increase in heart rate and blood pressure. Another example of physiological responses to ego threat involves an academic threat. In a study conducted by Rasmussen, Willingham, and Glover (1996), participants completed difficult mathematics problems presented for a very limited amount of time, and then overheard experimenters discussing their performance. In this study as well, participants demonstrated an increase in heart rate and blood pressure in response to the threat manipulation. Taken together, this research points toward the notion that ego threat results in physiological changes. Because physiological changes are not susceptible to self-presentational motivations, and because people (especially those with discrepant self-esteem) are often unaware

of or unlikely to divulge their true feelings, assessing physiological measures is an important assessment tool in the exploration of discrepant self-esteem and threat.

### **Risk-Taking as a Response to Negative Arousal**

Risk-taking behavior often occurs due to ego depletion, but research also suggests that negative emotional states are implicated in risky behavior. Given that ego threat incites negative mood and that there are individual difference variables that play a role in mood regulation, such as mental health variables, this link between threat and negative mood might mediate the relationship between ego threat and risk-taking. Research has shown that mental health is related to both emotional response to threat and risky behavior. In one study, children who displayed more negative mood symptomatology had a more extreme emotional reaction to threat than children who had fewer negative mood symptoms (Borelli, Sbarra, Crowley, & Mayes, 2011). Similarly, after a threat manipulation involving failure feedback on an intelligence test, participants who exhibited anxiety and depression had a more emotionally-charged, aggressive response to the threat than did those who were mentally healthy (Stucke & Sporer, 2002).

In conjunction with the idea that mental health variables are related to risk-taking behavior in general, which might be due to these intensified emotional responses to threat, people with poor mental health have been shown to engage in riskier behavior than people who are mentally healthy. For example, adolescents with depressive symptoms take more health-related risks, such as risky sexual and drug-related behavior (Testa & Steinberg, 2010). Studies have also demonstrated that depression (Lawal, 2011; Wilson, Asbridge, Kisely, & Langille, 2010) and anxiety (Lawal, 2011) predict sexual risk-taking behaviors in adolescents.

This propensity towards risk-taking for people with poor mental health extends to gambling behaviors (Lindberg, Fernie, & Spada, 2011): Depression symptoms in early

adolescence predict problem gambling in late adolescence (Lee, Storr, Ialongo, & Martins, 2011), and displaying two symptoms of depression was shown to predict being at risk of problem gambling, being a problem gambler, or being a pathological gambler (Momper, Delva, Grogan-Kaylor, Sanchez, & Volberg, 2010). Taken together, these studies demonstrate that people who have poor mental health might respond more emotionally to threatening situations and thus display more extreme risk-taking behaviors.

### **The Present Study**

The goal of the present study was to investigate the connection between self-esteem discrepancy and risk-taking behaviors following ego threat. In the context of this analysis, I compared the emotional and physiological responses to threat of participants with secure versus discrepant self-esteem. In addition to the overall exploration of self-esteem discrepancy and risk-taking, another purpose of this study was an exploration of trait mental health measures: namely, whether trait measures of depression and anxiety interact with discrepant self-esteem and/or moderate the relationship between self-esteem discrepancy and risk-taking. Given that self-esteem discrepancy has been associated with a variety of mental health-related problems (Schröder-Abé et al., 2007; Spalding & Hardin, 1999; Vater et al., 2010; Watson et al., 2002; Zeigler-Hill, 2011), I hypothesized that mental health would be negatively associated with self-esteem discrepancy, such that those participants with higher scores on the depression and anxiety measures would exhibit more self-esteem discrepancy than those with lower scores on the depression and anxiety measures. Furthermore, given that those with depression and anxiety have more intense emotional responses to threat (Borelli et al., 2011; Stucke & Sporer, 2002), and are in general more likely to engage in risky behavior (Lee et al., 2011; Momper et al., 2010; Testa & Steinberg, 2010), I hypothesized that having poor mental health would augment

the influence of ego threat on risk-taking, such that among those with discrepant self-esteem, depressed and anxious participants would be riskier than those who were not depressed or anxious.

This study also explored the mechanisms underlying responses to ego threat for those with secure and discrepant self-esteem. For example, does ego threat diminish mood, such that those with discrepant self-esteem engage in risky behavior to repair mood? Alternatively, does ego threat affect people below the level of consciousness, such that they are unaware of the emotional consequences of ego threat and the potential mood augmentation that risk-taking might instigate? To answer this question, explicit measures of mood, as well as physiological measures of heart rate and blood pressure were assessed to demonstrate whether the physiological and/or emotional changes incited by ego threat are alleviated following risk-taking behavior.

Prior to their arrival at the laboratory, participants completed several measures of explicit self-esteem, trait risk-taking behavior, depression, and anxiety. Upon their arrival at the lab, participants completed the self-esteem Implicit Association Task (Greenwald & Farnham, 2000). Experimenters told participants the purpose of the study was to investigate verbal abilities, such as performance on GRE test questions and delivery of a persuasive, well-organized speech. Participants completed a verbal test with questions similar to those found in the GRE, and were given false feedback based on threat condition (either positive or negative feedback). Then participants completed the Balloon Analogue Risk Task (BART; Lejuez et al., 2002), a measure of risk-taking. At four points throughout the experiment, participants' emotional states were assessed via mood measures and physiological states (heart rate and blood pressure) were assessed via a digital monitor.

Given the prior literature suggesting detrimental effects of discrepant self-esteem on self-regulation following ego threat, I hypothesized that a relationship would emerge between self-esteem discrepancy and risk behavior, moderated by ego threat condition. I predicted that participants with discrepant self-esteem would be more dramatically affected by the ego threat, such that, among participants in the ego threat condition, those with discrepant self-esteem would engage in riskier gambling behavior in the BART relative to those with secure self-esteem. Among those with discrepant self-esteem, I expected those with higher depression and anxiety to experience a more dramatic response to threat (exhibited by greater risk-taking) than those with low depression and anxiety. In addition, I hypothesized that due to self-presentational motivations, those with discrepant self-esteem would not demonstrate more dramatic mood changes following ego threat than those with secure self-esteem, but that a comparison of physiological measures would demonstrate that participants with discrepant self-esteem showed more dramatic physiological changes (as evidenced by greater magnitude of heart rate and blood pressure increase and subsequent decrease) following after ego threat and risk-taking than did participants with secure self-esteem.

## **Method**

### **Participants**

One hundred Hamilton College undergraduate students (25 men, 69 women, and 6 other/no response) participated in the study. Participants ranged in age from 18 to 22 years ( $M = 19.0$ ,  $SD = 1.09$ ). Most of the participants were Caucasian (71.0%), with some Asian (10.0%), Hispanic (5.0%) and African-American (4.0%). Participants were solicited via both an online recruitment program and fliers posted throughout campus. They were compensated with one-fifth of their earnings on the Balloon Analogue Risk Task (BART), as well as with extra course

credit for those participants enrolled in Psychology classes.

### **Materials**

**Explicit self-esteem.** Participants' explicit self-esteem was operationalized their score on a common and well-validated explicit self-esteem scale: the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965). The RSES (Rosenberg, 1965) included 10 items (e.g., *I am able to do things as well as most other people*). Participants rated the items on 10-point rating scales ranging from 1 (strongly disagree) to 10 (strongly agree). (This scale was revised from the original format, containing 4-point scales, in order to increase variability in responses.)

**Implicit self-esteem.** Participants completed the self-esteem Implicit Association Task (IAT; Greenwald & Farnham, 2000) on the computer, in which they pressed the "e" or "i" keys to quickly categorize words as either "me"-related categories (*me, my, I, self*) or "other"-related categories (*they, them, their, other*) and as either "positive" categories (*warmth, friend, smile, sunshine, joy, happy*) or "negative" categories (*agony, death, disease, vomit, evil, pain*). The target words were presented in the middle of the screen, and the category labels were presented in the top left and top right corners of the screen. When participants incorrectly categorized a target word, the computer program displayed a red "X" in the center of the screen that disappeared after participants made the correct response. Scoring is based on the premise that those with high implicit self-esteem should be quicker to associate positive and "me"-related words than negative and "me"-related words, compared with those with low implicit self-esteem. Thus, when positive and "me"-related words share a response key, participants with high implicit self-esteem should have shorter response latencies than when negative and "me"-related words share a response key. Scoring of the IAT was based on the IAT  $d$  score (Greenwald, Nosek, & Banaji, 2003). Positive values of  $d$  indicate high implicit self-esteem, whereas negative values

indicate low implicit self-esteem.

**Trait mental health and personality.** Participants completed the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977), a validated measure of depression for non-clinical populations. The CES-D includes 20 statements indicating depression-related symptoms (e.g., *I felt lonely*); participants rated their experience of these symptoms on 4-point rating scales, where 1 indicated they experienced the symptom rarely or none of the time and 4 indicated they experienced the symptom most or all of the time. Participants also completed the trait form of a commonly-used measure of non-clinical level anxiety, the State-Trait Anxiety Inventory (STAI; Spielberger, 1972). The STAI included 20 statements indicating anxiety-related symptoms (e.g., “I feel like a failure”); participants rated their experience of these symptoms on 4-point rating scales, from 1 (experienced almost never) to 4 (experienced almost always). In addition, participants completed a well-known measure of trait risk-taking behaviors, the Stimulating Risk-Taking Inventory (SRT; Zaleskiewicz, 2001). The SRT included ten 4-point rating scales, where 1 indicated that the statement (e.g., “I often take risks just for fun”) did not describe the participant at all and 4 indicated that the statement described the participant very well.

**Current mood.** Participants completed an adaptation of McFarland and Ross’s (1982) Mood Adjective Scale. The Mood Adjective Scale is comprised of six subscales: Happiness (containing 4 items, e.g., “satisfied”), Sadness (containing 4 items, e.g., “disappointed”), High Self-Esteem Feelings (containing 4 items, e.g., “proud”), Low Self-Esteem Feelings (containing 5 items, e.g., “inadequate”), Anger (containing 3 items, e.g., “mad”), and Threat (containing 5 items, e.g., “insecure”). The subscales of interest in this study were High Self-Esteem, Low Self-Esteem, Anger, and Threat; the other subscales were included as distracter items. Participants



rated the 25 mood-related adjectives on 11-point rating scales, where 1 indicated that the participant felt that emotion “not at all” and 11 indicated the participant felt that emotion “extremely.”

**Risk-taking.** Participants completed the Balloon Analogue Risk Task (BART; Lejuez et al., 2002). The BART is an in-laboratory behavioral measure of risk-taking that correlates with risk-related constructs (e.g., sensation-seeking) as well as with real-world self-reported risk behaviors (e.g., unsafe sexual practices). In the BART, participants were presented with an image of a balloon. Participants were given instructions that each click of a mouse would pump air into the balloon, and for every pump of air, they would receive five cents. However, each balloon contained a certain randomized number of pumps before it popped, and once popped the participant would lose all the money that had been accumulated for that balloon trial, at which point the next balloon trial would appear. At any point in time, participants could choose to transfer the money accumulated during a single balloon trial into a permanent reserve by clicking a button labeled “Collect \$\$\$.” To increase the realism of the task, participants were told that their compensation for the experiment would be a proportion of their earnings on the BART.

**Heart rate and blood pressure.** To assess systolic blood pressure, diastolic blood pressure, and heart rate, experimenters used the ADC Advantage Semi-Auto Upper Arm Digital Blood Pressure Monitor.

### **Procedure**

Prior to the laboratory portion of the experiment, participants completed the explicit self-esteem scales (the SLCS, RSES, and the FIS) and the trait mental health and risk-taking measures (CES-D, STAI, and SRT) using the online survey program, Qualtrics, on their personal computers. Participants then came to the lab individually, ostensibly for a study of verbal skills

and decision-making. The in-laboratory portion of the experiment was run using the Inquisit program on a McIntosh computer running a Windows 2000 operating system. After securing informed consent, a female experimenter instructed participants to rest quietly for 3 minutes while listening to relaxing music (Beethoven's *Moonlight Sonata*), in order to assess physiological baseline measures prior to the experiment. The experimenter then connected the participant to the ADC Advantage Semi-Auto Upper Arm Digital Blood Pressure Monitor. Using this monitor, the experimenter positioned the cuff on the participant's arm with the brachial artery marker aligned with the participant's artery on the inner side of his or her arm. The experimenter instructed the participant to place his or her arm on a table with the palm upwards, so that the cuff was at heart level. The experimenter then used the bulb to inflate the cuff to a pressure of 170 mmHg. After inflating the bulb, the experimenter lay the bulb down, at which point the measurement proceeded without interference. When a long beep tone sounded, the measurements of systolic and diastolic blood pressure, and heart rate, were displayed and recorded. Then the experimenter pressed the quick release valve on the bulb.

Following the baseline physiological recording, participants completed the mood measure on the computer, followed by the self-esteem IAT. They were then randomly assigned to either the ego-threat or no-threat condition. An experimenter told participants that, as the study had to do with verbal abilities, their verbal abilities would be assessed via both a written evaluation of skills (a GRE-like verbal test) and an oral evaluation of their persuasive ability and idea organization (a speech they would give later in the experimental hour). Experimenters intensified the importance of the GRE test by mentioning that the GRE is designed to predict success after college, and that one goal of the current study was to explore the association between GRE verbal scores and speech-giving abilities. Experimenters left a list of possible speech topics on

the computer table so that the upcoming speech remained salient in the participants' minds throughout the experiment.

Participants completed the GRE reading comprehension and analogy questions on the computer. Participants in the ego-threat condition received a difficult version of the test, with the correct answers removed, whereas participants in the no-threat condition received an easier version of the test, with seemingly-plausible but incorrect answers removed and the correct answers remaining. The removal of the correct answers for the ego-threat condition and plausible answers for the no-threat condition was intended to increase the believability of the false feedback. Upon completion of the GRE verbal task, the computer delivered the threat manipulation. The screen showed the false score of the participant, the percentile, and a graph showing the percentage of Hamilton College students who scored in various score ranges. For the ego-threat condition, participants were informed they answered 5 questions correctly out of 12 possible questions, which placed them in the 25<sup>th</sup> percentile. For the no-threat condition, participants were informed that they answered 10 out of 12 questions, which placed them in the 93<sup>rd</sup> percentile. The graph for the ego-threat condition showed that the participant scored much lower than most Hamilton students, whereas the graph for the no-threat condition showed that the participant scored much higher than did most Hamilton students. To increase the salience of the threat, after the false feedback had been presented, the experimenter asked the participant to read out their score and percentile from the feedback screen, ostensibly so the experimenter could record the information on the clipboard. Following the manipulation, the experimenters recorded another set of physiological measures via the ADC Advantage Semi-Auto Upper Arm Digital Blood Pressure Monitor.

The next portion of the experiment involved the dependent variable of risk-taking,

assessed through 20 trials of the Balloon Analogue Risk Task (BART). The participants were instructed to complete 10 trials of the BART, at which point the experimenter entered the room and recorded the participants' physiological measures and administered a paper version of the Mood Adjective Scale. Then the participant completed the final 10 trials of the BART, after which the participants' physiological were recorded again, and the participants completed another Mood Adjective Scale on the computer.

After completion of the BART, participants completed a manipulation check. They were instructed to complete a questionnaire indicating their score on the GRE verbal test, out of 12 possible points. Participants completed the item "*How much do you care about your score?*" on a scale of 1 to 11, where 1 indicated "not at all" and 10 indicated "very much." The next item of the manipulation check was "*How confident are you about the upcoming speech?*" where 1 indicated "not at all confident" and 11 indicated "very confident." Experimenters then informed the participants that the experiment was over, and that they would not actually be giving a speech. After participants were fully debriefed, they were thanked for their participation, compensated with a proportion of their BART earnings, and dismissed.

## **Results**

### **Overview of Analyses**

Of the 100 participants, data were deleted for 17 participants who were suspicious about the feedback, for five participants who experienced technical difficulties that impeded data collection, and for one participant who had high error rates on the IAT.

Both explicit and implicit self-esteem scores were centered around their means for all of the analyses. Analyses computed from all 20 trials of the BART yielded few significant results. Consequently, the present analyses included data from the first 5 BART trials only (the ones

temporally closest to the manipulation). Thus, the dependent variable I included in the analyses was the adjusted pump count for the first five balloon trials, which reflects the mean number of inflations (clicks) per trial for balloons that did not pop. See Table 1 for the means and standard deviations of the self-esteem variables, the BART risk-taking for the first five balloon trials, and the intercorrelations between the self-esteem variables. As shown in the table, explicit self-esteem, implicit self-esteem, and BART risk-taking were not correlated with one another, consistent with prior findings on the lack of correlation between explicit and implicit self-esteem (Borton et al., 2012, Bosson et al., 2000).

For the regression equations, I entered the centered explicit and implicit self-esteem measures, the effect-coded condition variable (threat condition = -1, no-threat condition = +1), and all two- and three-way interactions. For each of the mood subscales for the four assessment periods, the Cronbach's alphas were adequate, ranging from .74 to .94.

Table 1

*Correlations Among Self-Esteem (SE) and Risk-Taking Variables*

	Explicit SE	Implicit SE	Risk-Taking	<i>Mean</i>	<i>SD</i>
Explicit SE	---			7.52	1.44
Implicit SE	.038	---		0.77	0.31
Risk-Taking	-.002	-.046	---	36.89	27.92

### **Response to Threat Manipulation**

**Emotional response to threat.** To determine whether those with discrepant self-esteem experienced a less dramatic emotional response to threat than those with secure self-esteem, I calculated mood change difference scores for each of the mood subscales, subtracting mood

scores at Time 1 from mood scores at Time 2. Thus, a positive difference score for any given mood subscale represented an increase in subscale-related feelings after the manipulation. For these analyses, I considered the mood subscales of Threat, Anger, High Self-Esteem, and Low Self-Esteem. I expected that participants with discrepant self-esteem would show less dramatic increase in negative feelings following the threat manipulation compared with those with secure self-esteem. For the no-threat condition, I did not expect a difference between those with discrepant versus secure self-esteem. I found significant results for the Anger, High Self-Esteem, and Low Self-Esteem subscales, but not for the Threat subscale.

For the Anger mood subscale change score, there was a significant main effect for explicit self-esteem,  $t(70) = -2.88, p = .005, \beta = -.27$ , such that self-esteem was negatively associated with anger increase following the manipulation. There was also a significant main effect of feedback condition,  $t(70) = -4.32, p < .001, \beta = -.41$ , such that participants in the threat condition showed a greater increase in anger than did those in the no-threat condition. There was also a significant Explicit x Implicit interaction,  $t(70) = 2.16, p = .035, \beta = .22$ , and a significant Explicit x Condition interaction,  $t(70) = 3.20, p = .002, \beta = .30$ . As expected, these two-way interactions were qualified by a significant Explicit x Implicit x Condition interaction,  $t(70) = -3.23, p = .002, \beta = -.33$ . To probe the nature of this interaction, I examined the Explicit x Implicit interaction separately by condition. As expected, no significant effects emerged in the no-threat condition. There was a significant Explicit x Implicit interaction in the threat condition,  $t(33) = 2.62, p = .014, \beta = .42$ . I tested simple slopes at values 1 *SD* above and below the mean for explicit self-esteem. In line with my hypotheses, among those high in explicit self-esteem, implicit SE was positively associated with increase in anger scores between T1 and T2 at a level of marginal statistical significance,  $t(30) = 1.84, p = .08, \beta = .57$  (see Figure 1). Thus, following

positive feedback, participants with discrepant self-esteem showed less increase in anger than did those with secure self-esteem. Among those with low explicit self-esteem, implicit self-esteem was negatively associated with increase in anger scores between T1 and T2,  $t(30) = -2.07$ ,  $p = .05$ ,  $\beta = -.50$ .

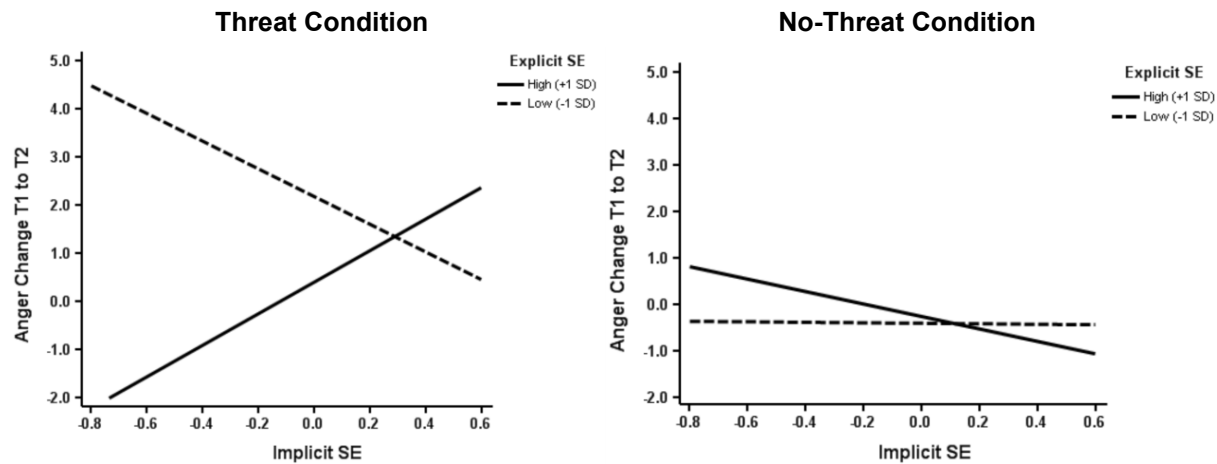


Figure 1. Anger change following manipulation as a function of implicit self-esteem, explicit self-esteem, and feedback condition. Higher numbers indicate greater anger increase following the manipulation.

A similar pattern of mood change scores between T1 and T2 occurred for the High Self-Esteem mood subscale: First, there was a main effect of feedback condition,  $t(70) = 9.30$ ,  $p < .001$ ,  $\beta = .72$ , such that those in the threat condition had significantly lowered high self-esteem feelings following the manipulation than did those in the no-threat condition. In addition, there was a significant Explicit x Implicit x Condition interaction,  $t(70) = 2.10$ ,  $p = .039$ ,  $\beta = .18$ . To probe the nature of this three-way interaction, I examined the Explicit x Implicit interaction separately by feedback condition. I found a significant Explicit x Implicit interaction,  $t(33) =$

-2.43,  $p = .021$ ,  $\beta = -.44$ , in the threat condition only. For those high in explicit self-esteem, implicit self-esteem was marginally negatively associated with an increase in high self-esteem feelings following the manipulation,  $t(30) = -1.90$ ,  $p = .067$ ,  $\beta = -.47$ . For those low in explicit self-esteem, however, implicit self-esteem was positively associated with high self-esteem feelings increase following the manipulation at a level of marginal statistical significance,  $t(30) = 1.76$ ,  $p = .088$ ,  $\beta = .34$  (see Figure 2). Thus, in line with my hypotheses, when participants with discrepant self-esteem experienced threat, they reported a less dramatic decrease in high self-esteem feelings than did those with secure self-esteem. In the no-threat condition, there were no significant main effects or interactions.

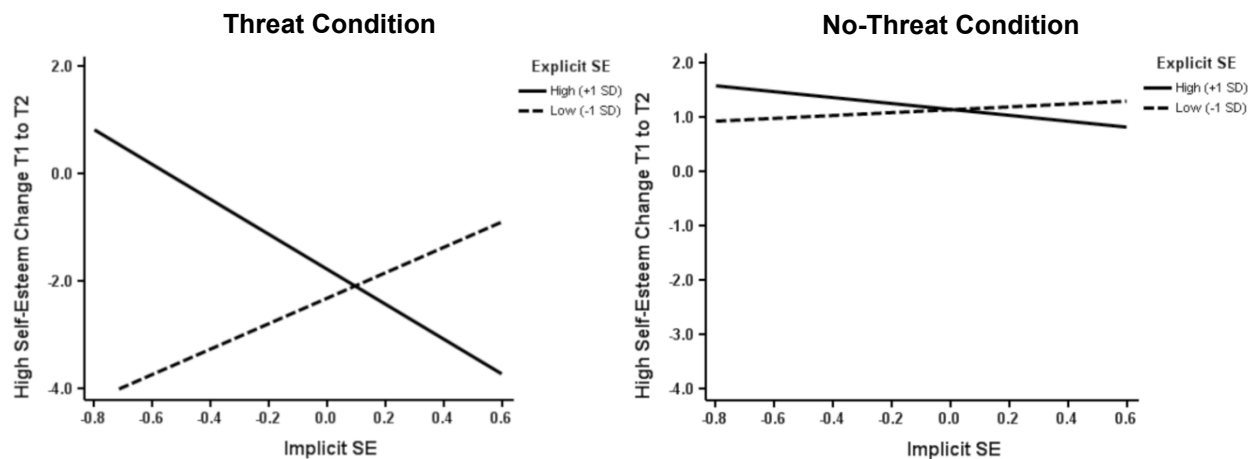


Figure 2. High self-esteem feelings change as a function of implicit self-esteem, explicit self-esteem, and feedback condition. Higher numbers indicate greater high self-esteem feelings increase following the manipulation.

For the Low Self-Esteem mood subscale mood change scores following the manipulation, I found a similar data pattern. First, there was a main effect of feedback condition,  $t(70) = -6.71$ ,



$p = < .001$ ,  $\beta = -.59$ , such that those in the threat condition reported a much greater increase in low self-esteem feelings than did those in the no-threat condition. Again, the Explicit x Implicit x Condition interaction was statistically significant,  $t(70) = -2.90$ ,  $p = .005$ ,  $\beta = -.28$ . I examined the Explicit x Implicit interaction separately by condition, and analyzed the simple slopes for the explicit self-esteem scores 1 *SD* above and below the mean (see Figure 3). In the threat condition, among those with high explicit self-esteem, the pattern of data suggested that implicit self-esteem was negatively associated with increase in low self-esteem feelings, although this simple slope did not reach statistical significance,  $t(30) = -1.49$ ,  $p = .15$ ,  $\beta = -.52$ . Among those with low explicit self-esteem, the pattern of data suggested that implicit self-esteem was positively associated with low self-esteem feelings, although this simple slope did not reach statistical significance,  $t(30) = 1.66$ ,  $p = .106$ ,  $\beta = .46$ . In the no-threat condition, there were no significant main effects or interactions. The pattern of this trend corresponds with previous mood change difference scores, suggesting that, compared with those with secure self-esteem, participants with discrepant self-esteem showed little increase in negative emotions after threat.

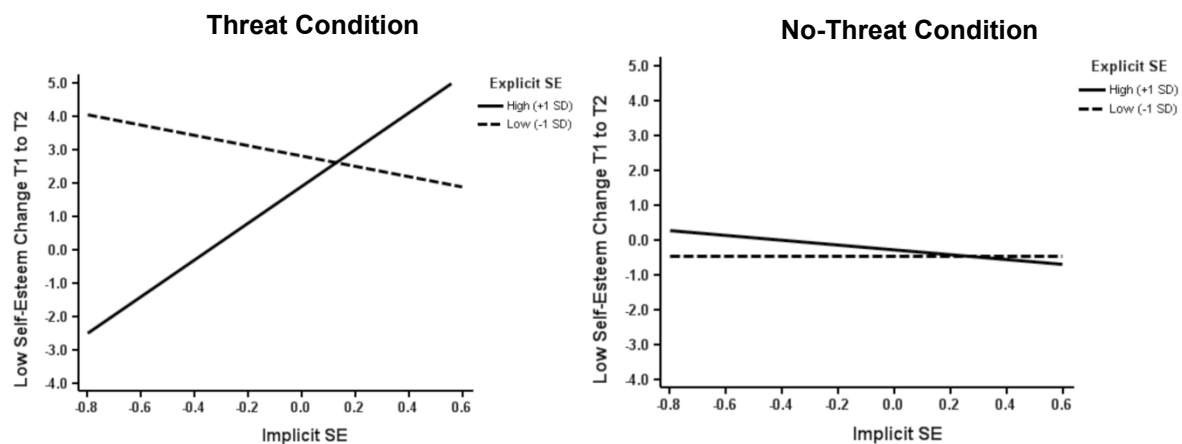


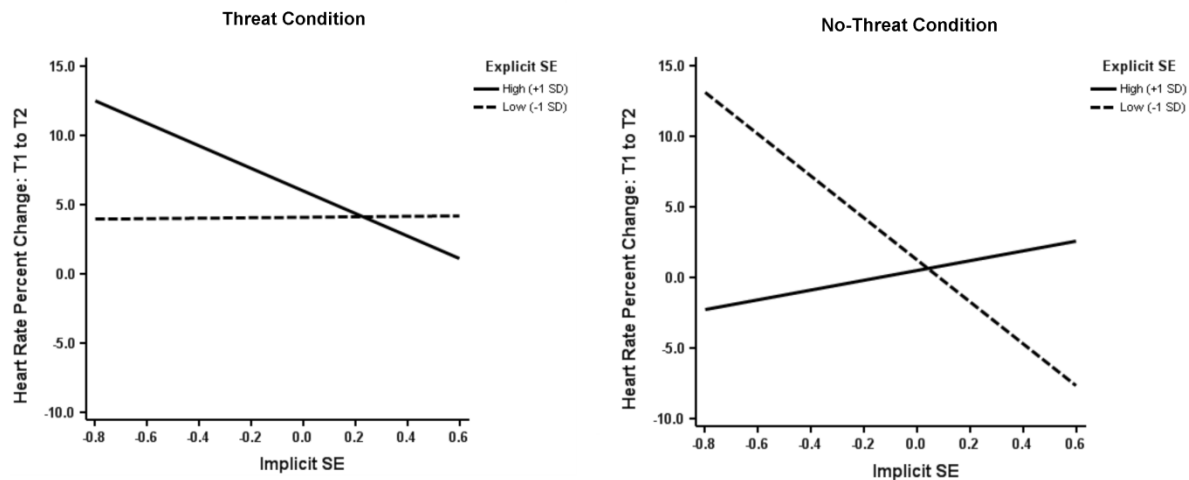
Figure 3. Low self-esteem feelings change following manipulation as a function of implicit self-esteem, explicit self-esteem, and feedback condition. Higher numbers indicate greater low self-esteem feelings increase.

**Physiological response to threat.** I hypothesized that although participants with discrepant self-esteem would be less emotionally responsive to threat as assessed through self-report mood scales, they would show more physiological reactivity due to their inability to mask their physiological states. Thus, I hypothesized that self-esteem discrepancy would predict physiological responsiveness to threat in terms of heart rate and blood pressure. For the physiological dependent variables, I conducted percentage change scores for heart rate, systolic blood pressure, and diastolic blood pressure, such that each type of physiological measure represented the relative change between pre- and post-manipulation physiological readings (a positive percentage change score indicates an increase in heart rate or blood pressure).

No significant main effects or interactions emerged for heart rate change following threat. However, when I added gender as an independent variable and considered all two-, three-, and four-way interactions, I found a significant main effect of condition,  $t(68) = -2.44, p = .018, \beta = -.40$ , such that those in the threat condition showed much greater increase in heart rate than did those in the no-threat condition. Furthermore, I found a significant Explicit x Implicit x Condition interaction,  $t(68) = 2.39, p = .020, \beta = .44$ . I examined the Explicit x Implicit interaction separately by condition, and found no statistically significant interaction in the threat condition, although the pattern was in the direction of my hypotheses, such that those with discrepant self-esteem showed nonsignificantly greater heart rate increase following the manipulation than did those with secure self-esteem (see Figure 4). In the no-threat condition, there was an Explicit x Implicit interaction that was just shy of statistical significance,  $t(35) = 1.56, p = .129, \beta = .27$ . An examination of simple slopes in the no-threat condition at levels 1 *SD* above and below the mean for explicit self-esteem showed no significant slope for high explicit self-esteem. However, there was a significant simple slope for those with low explicit self-

esteem, such that implicit self-esteem was negatively associated with physiological reactivity,  $t(32) = -2.00, p = .054, \beta = -.36$ .

There were no significant effects for either systolic or diastolic blood pressure change following the manipulation. Thus, my hypotheses concerning the increased physiological reactivity of those with discrepant self-esteem were unsupported by the data: Those with discrepant self-esteem were no more physiologically reactive after ego threat than were those with secure self-esteem, although the trends for heart rate reactivity for threat suggest that those with discrepant self-esteem are more responsive to threat than those with secure self-esteem.



*Figure 4.* Heart rate change following manipulation as a function of explicit self-esteem, implicit self-esteem, and feedback condition. Higher numbers indicate greater heart rate percentage increase.

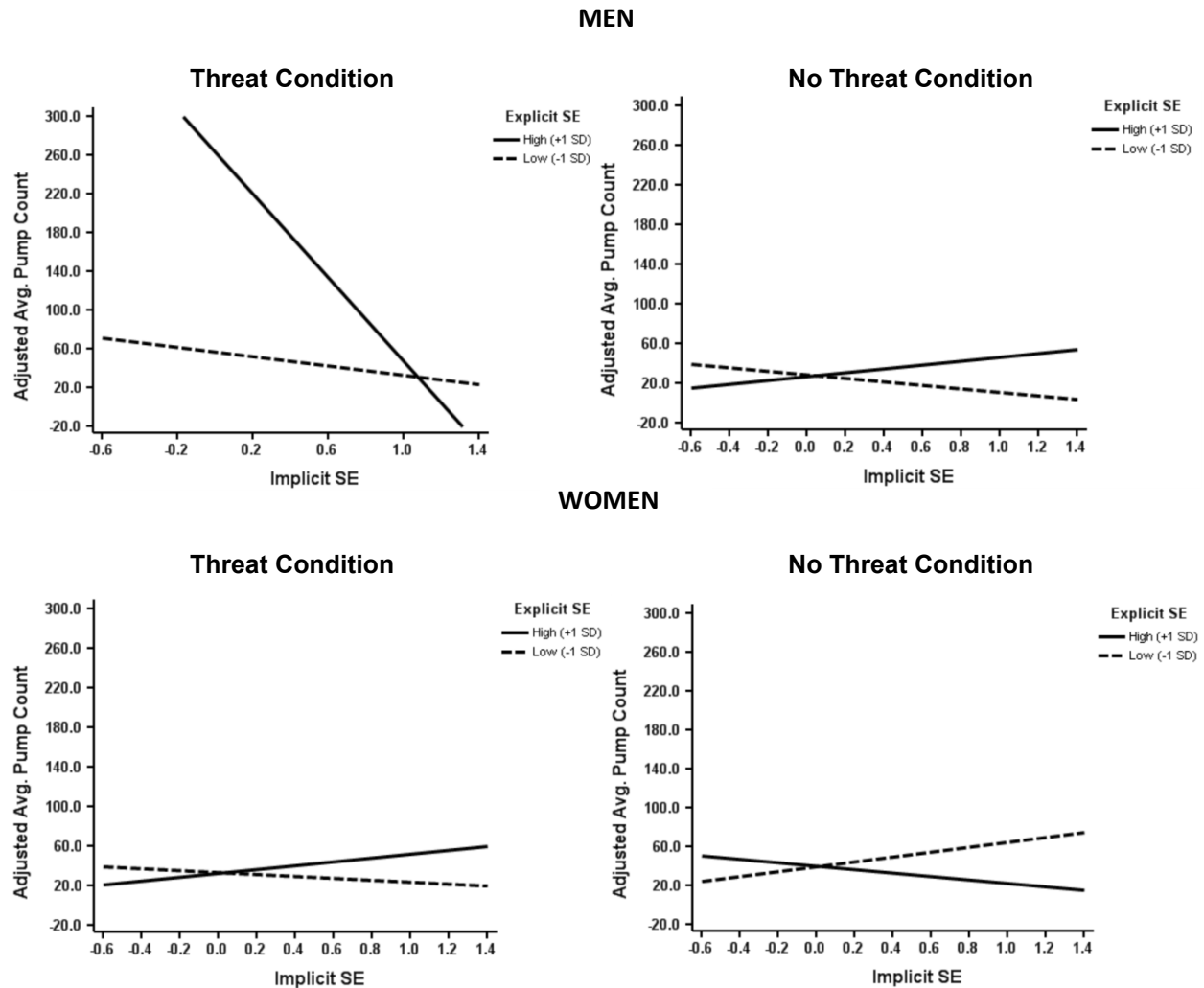
### Risk-Taking Behavior

**Discrepant self-esteem and risk-taking behavior.** I hypothesized that those with discrepant self-esteem would be more susceptible to ego threat, and would thus seek to repair

their negative states by engaging in riskier behavior compared with those with secure self-esteem. However, the data show that self-esteem discrepancy was not associated with risk-taking behavior: No significant main effects or interactions emerged in the primary analysis with implicit self-esteem, explicit self-esteem, condition, and their two- and three-way interactions as independent variables.

**Gender, discrepant self-esteem, and risk-taking behavior.** However, when the analyses included gender as a fourth predictor variable, along with explicit self-esteem, implicit self-esteem, condition, and all the two-, three-, and four-way interactions, significant interactions emerged that suggest that my hypotheses about self-esteem discrepancy and risk-taking might be supported for male but not female participants. However, due to the small number of men in the sample, and the resultant small number of participants in each group, these results should be considered exploratory. There was a significant Explicit x Implicit x Condition x Gender interaction,  $t(7) = 2.94, p = .005, \beta = .44$ . To examine the nature of this interaction, I examined the Explicit x Implicit interaction separately by gender and condition. For women in the threat condition, women in the no-threat condition, and men in the no-threat condition, there were no significant main effects or interactions. However, for the men in the threat condition, there was a significant main effect of explicit self-esteem,  $t(7) = 3.38, p = .028, \beta = .501$ , such that explicit self-esteem was positively associated with risk-taking, and a significant main effect of implicit self-esteem,  $t(7) = -5.07, p = .007, \beta = -1.38$ , such that implicit self-esteem was negatively associated with risk-taking. These main effects were qualified by a significant Explicit x Implicit interaction,  $t(7) = -3.33, p = .029, \beta = .95$ . An examination of the simple slopes at 1 *SD* above and below the mean for explicit self-esteem revealed, as illustrated by Figure 5, that among men with high explicit self-esteem, implicit self-esteem was negatively associated with riskiness

following threat,  $t(4) = -5.03, p = .01, \beta = -2.37$ , whereas among men with low implicit self-esteem, there was no significant association between implicit self-esteem and riskiness. In the no-threat condition, no significant main effects or interactions emerged. Thus, men with discrepant self-esteem tended to take more risks following threat than did those with secure self-esteem. Among female participants, no such main effects or interactions emerged (see Figure 5).



*Figure 5.* Risk-taking behavior for women versus men as a function of implicit self-esteem, explicit self-esteem, and feedback condition. Higher numbers indicate greater adjusted average pump count (riskier behavior).

## Response to Risk-Taking

**Emotional response to risk-taking.** In general, those with discrepant self-esteem were less “repaired” from their negative mood states than were those with secure self-esteem. I analyzed the effects of risk-taking on mood at two points – once after the participant completed 10 trials and once after the participant completed all 20 trials. I then computed difference scores for mood change, subtracting mood scores at Time 2 from mood scores at Time 3 (for the first recording point), and subtracting mood scores at Time 2 from mood scores at Time 4 (for the second recording point). In these analyses, I found significant interactions for low self-esteem feelings following 10 BART trials, low self-esteem feelings following 20 BART trials, and anger following 20 BART trials. For the low self-esteem feelings following 10 BART trials as a dependent variable, there was a significant main effect of feedback condition,  $t(69) = 4.98, p < .001, \beta = .50$ , such that participants in the threat condition experienced greater mood repair (greater decrease in low self-esteem feelings) following 10 trials of the BART than did participants in the no-threat condition. In addition, I found a significant Explicit x Implicit x Condition interaction,  $t(69) = 2.32, p = .024, \beta = .25$ . Examining the data separately by condition, I found a significant Explicit x Implicit interaction in the threat condition,  $t(30) = -2.12, p = .043, \beta = -.39$ . Upon examination of the simple slopes tested 1 *SD* above and below the mean for explicit self-esteem (see Figure 6), I found that among those with high explicit self-esteem, implicit self-esteem was (nonsignificantly) negatively associated with low self-esteem feeling increase following risk-taking,  $t(30) = -1.49, p = .15, \beta = -.52$ . Among those low in explicit self-esteem, implicit self-esteem was (nonsignificantly) positively associated with risk-taking,  $t(30) = 1.66, p = .11, \beta = .46$ . In the no-threat condition, I found no significant simple slopes.

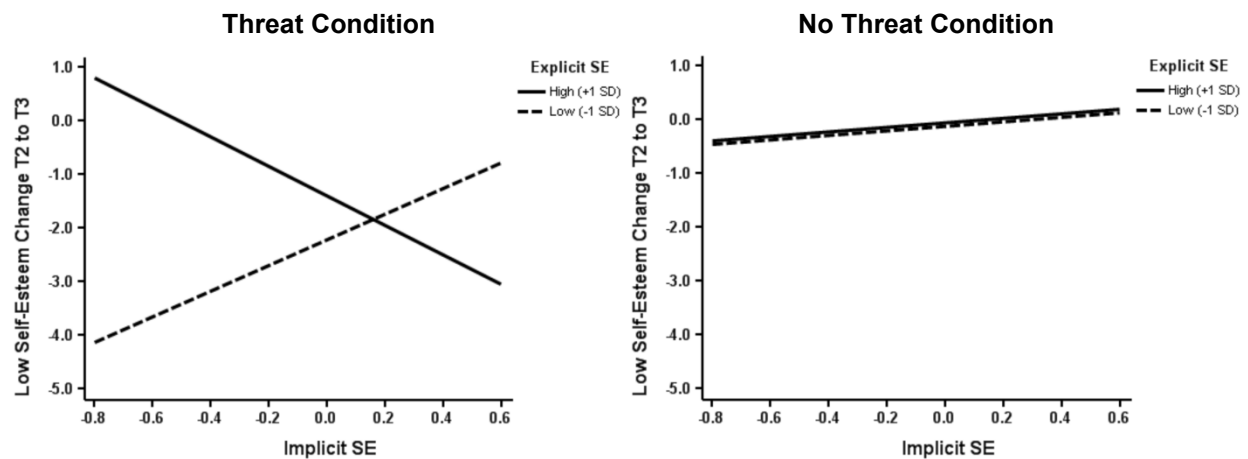


Figure 6. Low self-esteem feelings change following 10 BART trials as a function of implicit self-esteem, explicit self-esteem, and feedback condition. Higher numbers indicate greater low self-esteem feelings increase.

In a similar pattern, the data for low self-esteem feelings following 20 BART trials show that those with discrepant self-esteem tend to experience less dramatic decrease in low self-esteem feelings following risk-taking behavior. When I regressed the low self-esteem feelings difference score following 20 BART trials on implicit self-esteem, explicit self-esteem, and condition, a main effect for feedback condition emerged,  $t(69) = 5.43, p < .001, \beta = .53$ , such that those in the threat condition experienced significantly more mood repair (greater decrease in low self-esteem feelings) than did those in the no-threat condition. In addition, a significant Explicit x Implicit x Condition interaction emerged,  $t(69) = 2.06, p = .044, \beta = .21$ . I examined the Explicit x Implicit interaction separately by condition, and found a marginally-significant Explicit x Implicit interaction in the threat condition,  $t(29) = -1.77, p = .088, \beta = -.33$ . Upon examination of the simple slopes 1 *SD* above and below the mean for explicit self-esteem, I

found a simple slope for those high in explicit self-esteem whose trend suggests similar data patterns, although the slope only reaches near significance (see Figure 7). Among those with high-explicit self-esteem, implicit self-esteem is associated with greater decrease in low self-esteem feelings,  $t(29) = -1.52, p = .138, \beta = -.52$ . Among those low in explicit self-esteem, the simple slope did not reach statistical significance. In the no-threat condition, no significant effects or interactions emerged.

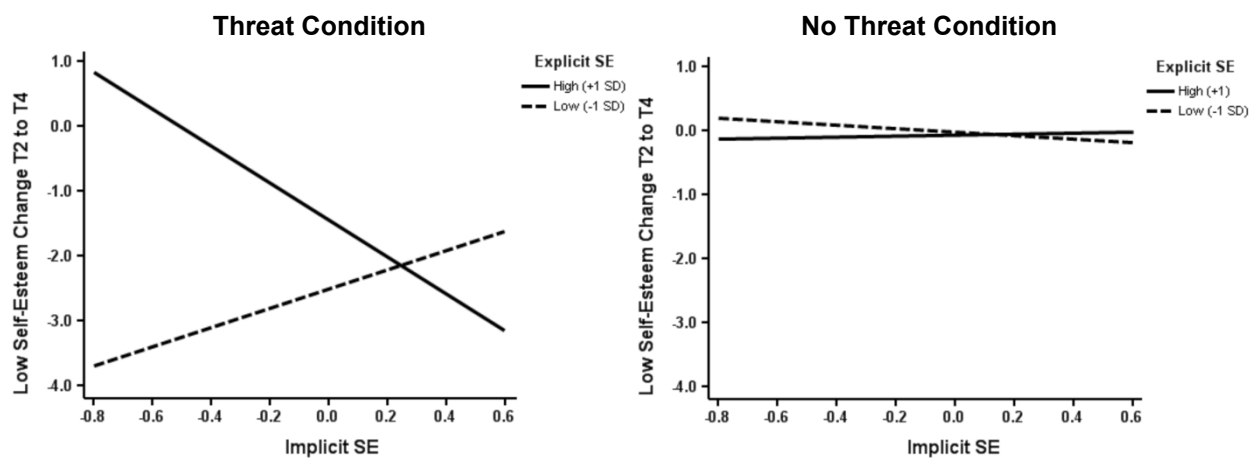


Figure 7. Low self-esteem feelings change following 20 BART trials as a function of implicit self-esteem, explicit self-esteem, and feedback condition. Higher numbers indicate greater low self-esteem feelings increase.

Anger change following 20 BART trials was regressed on implicit self-esteem, explicit self-esteem, condition, and all two- and three-way interactions. There was a main effect of explicit self-esteem,  $t(69) = 2.43, p = .018, \beta = .26$ , such that explicit self-esteem was negatively associated with anger decrease. There was also a significant main effect of feedback condition,  $t(69) = 2.61, p = .011, \beta = .27$ , such that those in the threat condition tended to report more anger



decrease. There was an Explicit x Implicit interaction,  $t(69) = -2.40, p = .020, \beta = -.27$ , as well as an Explicit x Condition interaction,  $t(69) = -2.71, p = .009, \beta = -.28$ , which was qualified by a significant Explicit x Implicit x Condition interaction,  $t(69) = 2.77, p = .007, \beta = .31$ . I examined the Explicit x Implicit interaction separately by condition. In the no-threat condition, no significant findings emerged, but for the threat condition, there was a significant Explicit x Implicit interaction,  $t(32) = -2.40, p = .023, \beta = -.41$ . An examination of the simple slopes for this interaction revealed significant slopes for the threat condition only (see Figure 8). Although the slope was just shy of statistical significance, among participants with high explicit self-esteem, implicit self-esteem was associated with anger decrease,  $t(30) = -1.64, p = .11, \beta = -.60$ . Thus, those with discrepant self-esteem experienced less mood repair than did those with secure self-esteem. Among participants with low explicit self-esteem, low implicit self-esteem predicted marginally more dramatic decrease in anger after risk-taking,  $t(30) = 1.93, p = .06, \beta = .55$ , such that those with low implicit, low explicit self-esteem benefited more in terms of mood repair than did those with high implicit, low explicit self-esteem.

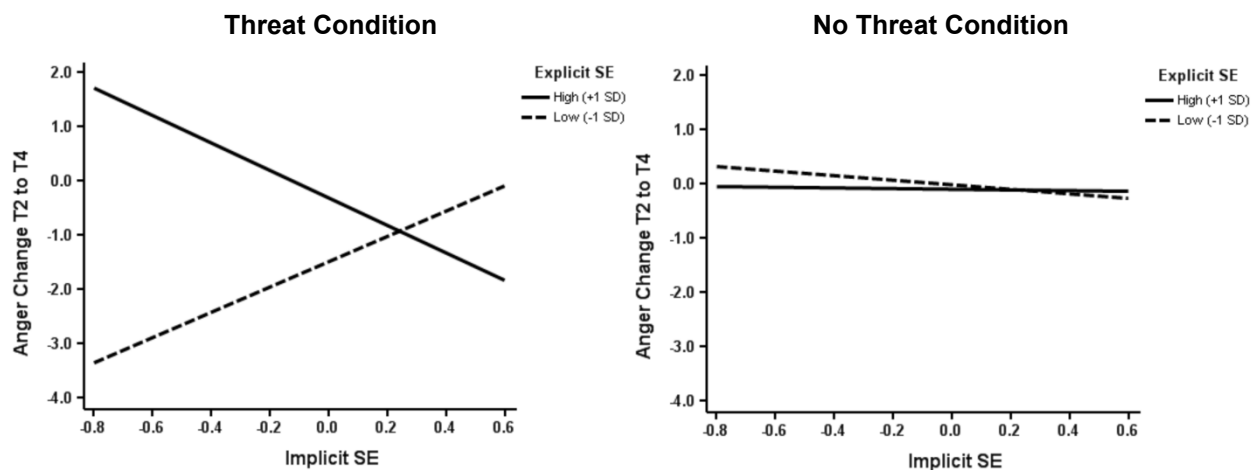


Figure 8. Anger change following 20 BART trials as a function of implicit self-esteem, explicit self-esteem, and feedback condition. Higher numbers indicate greater anger increase.

### Physiological Response to Risk-Taking

In terms of physiological response to risk-taking, I focused on the heart rate change scores due to the fact that heart rate was most affected by the threat manipulation. I considered the heart rate change scores from T2 to T4 (before and after the entire BART task), such that a high heart rate difference score indicates a high increase in heart rate following the BART. For heart rate change scores after the BART, I found a marginally-significant main effect of explicit self-esteem,  $t(66) = 1.90, p = .063, \beta = .24$ , such that explicit self-esteem was positively associated with heart rate increase following the BART. There was also a main effect of implicit self-esteem,  $t(66) = 2.42, p = .019, \beta = .32$ , such that implicit self-esteem was positively associated with heart rate increase following the BART. These main effects were qualified by a marginally-significant Explicit x Implicit x Condition interaction,  $t(66) = -1.81, p = .076, \beta = -.24$ . I examined the Explicit x Implicit interaction separately by condition, and found that for the threat condition, there was a main effect of implicit self-esteem,  $t(30) = 1.72, p = .096, \beta = .35$ , such that implicit self-esteem was negatively associated with heart rate decrease, as well as a trend toward an Explicit x Implicit interaction,  $t(30) = 1.55, p = .132, \beta = .32$ . Examining the simple slopes 1 *SD* above and below the mean for explicit self-esteem revealed that among those with high explicit self-esteem, implicit self-esteem was associated with greater decrease in heart rate during the BART,  $t(27) = 1.93, p = .064, \beta = .71$  (see Figure 9). In the no-threat condition, there were no significant findings, other than a main effect for explicit self-esteem,  $t(35) = 2.62, p = .013, \beta = .42$ , such that explicit self-esteem was negatively associated with heart rate decrease. Thus, the main finding relevant to self-esteem discrepancy lies in the response to risk-taking after being threatened – those with discrepant self-esteem in the threat condition showed greater physiological “repair” during the BART than did those with secure self-esteem.

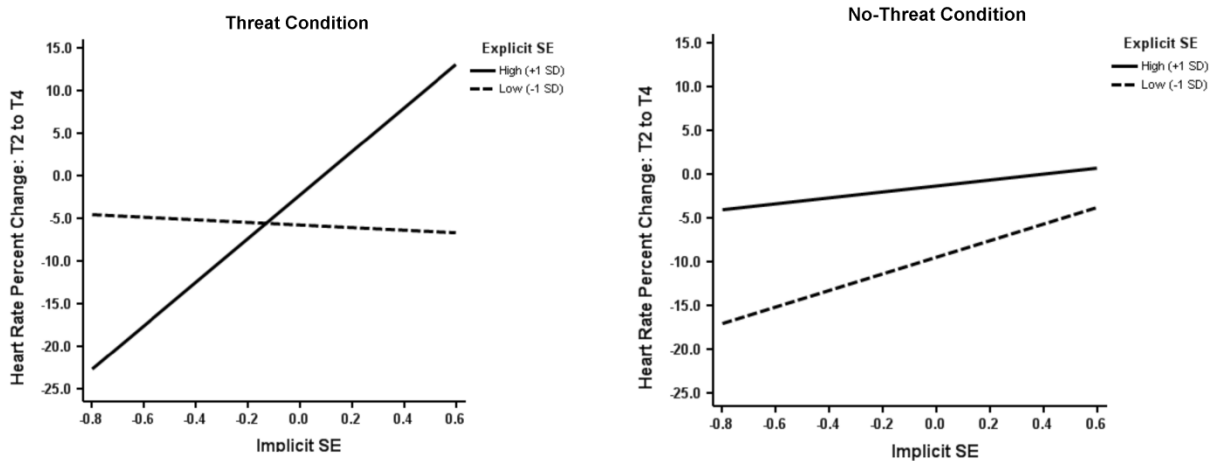


Figure 9. Heart rate change following BART as a function of explicit self-esteem, implicit self-esteem, and feedback condition. Higher numbers indicate greater heart rate percentage increase.

### Exploratory Mental Health Analyses

In order to examine the hypothesis that self-esteem discrepancy would be associated with poorer mental health, I regressed explicit and implicit self-esteem onto each of the mental health dependent variables: depression (CES-D score) and anxiety (trait subscale of the STAI). For depression score as the dependent variable, there was a main effect of explicit self-esteem,  $t(70) = -6.85, p < .001, \beta = -.64$ , such that explicit self-esteem was negatively associated with depression scores. There was no relationship between implicit self-esteem and depression, nor was there an Explicit x Implicit interaction. Thus, my hypothesis that self-esteem discrepancy would predict depression was not supported by the data. For anxiety as a dependent variable, I found a main effect for explicit self-esteem,  $t(70) = -10.88, p < .001, \beta = -.80$ , such that explicit self-esteem was negatively associated with anxiety scores. In addition, I found a marginally significant Explicit x Implicit interaction,  $t(70) = 1.86, p = .067, \beta = .14$ . An examination of the

simple slopes 1 *SD* above and below the mean explicit self-esteem score revealed a significant slope for those with low explicit self-esteem, such that implicit self-esteem was negatively associated with anxiety symptoms,  $t(67) = -2.24, p = .028, \beta = -.10$  (see Figure 10). For those with high explicit self-esteem, implicit self-esteem did not have a significant association with anxiety symptoms. Thus, self-esteem discrepancy was not associated with anxiety, as I hypothesized, but among those with low explicit self-esteem, implicit self-esteem was negatively associated with anxiety.

Another component of my hypothesis was that mental health would moderate the effect of self-esteem discrepancy on risk-taking behavior. To test this hypothesis, for each of the mental health variables, I analyzed whether mental health status played a role in the relationship between self-esteem discrepancy and risk-taking behavior. The depression measure (the CES-D), and the anxiety measure (the trait version of the STAI), were included as independent variables along with explicit self-esteem, implicit self-esteem, and condition (and their interactions), regressed onto risk-taking behavior. No significant interactions emerged with either depression or anxiety as factors in the interaction. These findings indicate that mental health variables did not moderate the relationship between self-esteem discrepancy and risk-taking following ego threat.

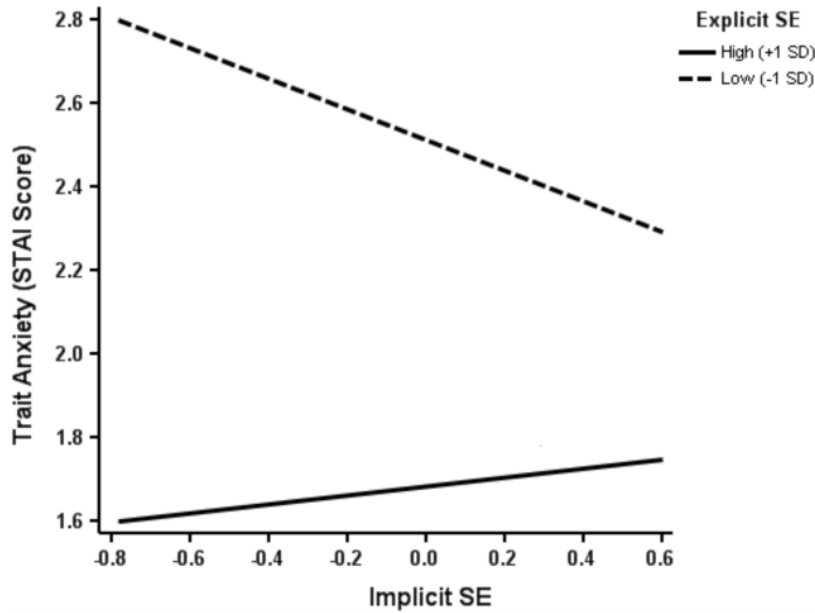


Figure 10. Trait anxiety as a function of implicit self-esteem and explicit self-esteem. Higher numbers indicate greater trait anxiety.

## Discussion

### Response to Threat

Consistent with my hypothesis, the data demonstrate that compared with people with secure self-esteem, those with discrepant self-esteem are less emotionally responsive to threat. Furthermore, although the physiological findings following the threat manipulation were not statistically significant, those with discrepant self-esteem showed physiological changes in heart rate that might belie their dampened emotional responsiveness, as assessed through state mood measures. When those with low implicit, high explicit self-esteem experience threats to their high explicit self-esteem, they employ a variety of self-protective mechanisms in order to reduce the discomfort of the incongruence of self-feelings (Jordan et al., 2003). The findings of this study corroborate other research concerning the self-presentational motivations of those with

discrepant self-esteem (Rudolph et al., 2010), as well as research showing that those with discrepant self-esteem are more likely to suppress anger (Schröder-Abé et al., 2007).

Thus, the data suggest that those with discrepant self-esteem are hesitant to convey negative affect following threat. People with discrepant self-esteem might show explicit self-confidence in order to mask internal self-dislike or self-doubt, an effect which is especially pronounced when they are given negative self-referent information (in this case, negative performance feedback). It may be the case that those with discrepant self-esteem are unable to acknowledge their true feelings to themselves. Alternatively, people with discrepant self-esteem might show less emotional responsiveness to threat because they discount the source of the feedback or consider it unrelated to their self-worth, in a process of defensive self-enhancement that is often associated with self-esteem discrepancy (Jordan et al., 2003). Given that those with discrepant self-esteem were not significantly physiologically more responsive to the threat manipulation than were those with secure self-esteem, this process of discounting the source or relevance of the negative self-referent information is a feasible interpretation of the data.

Nonetheless, I found a physiological trend suggesting that those with discrepant self-esteem were more physiologically reactive after threat in terms of heart rate. If the analyses were more robust, I might have found that those with discrepant self-esteem were in fact more physiologically affected by threat, which would belie their self-reported mood. The lack of statistical significance in this analysis might be explained by limitations of the study's methodology. Perhaps heart rate and blood pressure were not sensitive enough measures to capture the physiological effects of threat. Instead, other physiological measures might be more sensitive to threat manipulations; for example, research shows that galvanic skin response is strongly associated with psychological threat induced by cognitive tasks (Kilpatrick, 1972) and

threat induced by socially-evaluated cognitive tasks (Gruenewald, Kemeny, Aziz, & Fahey, 2004). Future research might involve replicating this study's methodology but substituting alternative physiological measures for heart rate and blood pressure.

### **Risk-Taking Behavior**

The preliminary findings regarding gender, self-esteem discrepancy, and risk-taking behavior suggest that men, but not women, with discrepant self-esteem tend to respond to ego threat through riskiness. Although the small sample size in this study was certainly a limitation of my research, the findings suggest that when men with discrepant self-esteem face a threat to their high explicit self-esteem, they seek to repair whatever negative states are produced – physiological or non-expressed emotional responses – through risk-taking, whereas women do not exhibit the same pattern. If a main effect of gender had emerged on the risk-taking dependent variables, I could explain this gender difference in risk-taking by previous findings that men are more likely to take risks in general, including gambling risks (Byrnes, Miller, & Schafer, 1999). However, some researchers have suggested that since the feminist movement and the consequent societal acceptance of women in traditionally male-dominated domains, gender differences in gambling patterns are becoming rare findings in data (Aasved, 2003). Thus, the lack of a main effect for gender in risk-taking makes sense; however, the moderating effect of gender suggests that men and women have different motivations for gambling as a function of discrepant self-esteem and ego threat. One study supporting this idea showed that compared with women, men tend to gamble because of egotistic motivations (e.g., narcissism and attention-seeking), whereas women tend to gamble as a means of escape from painful emotional experiences (Ledgerwood & Petry, 2006). Thus, when men confront the dissonance of their self-esteem discrepancy and

negative self-referent information (the threat manipulation), they might be more likely than women to engage in risky behavior.

Another element in risk-taking behavior that is important to consider is the role of self-presentation. Research suggests that peers tend to incite riskier behavior, and this effect is especially strong for adolescents and young adults (Gardner & Steinberg, 2005). In this study, the risk-taking task was personal (participants completed the BART in relative privacy), and thus self-presentational motivations were less applicable. Given research showing that men, especially, are likely to perceive the benefits of risk-taking as greater than the costs (Gardner & Steinberg, 2005), it is interesting to consider the population- and gender-related factors present in our study. Namely, our participants were young adults, who tend to be riskier than adults in all contexts, especially under the observation of peers (Gardner & Steinberg, 2005). Furthermore, among people with discrepant self-esteem, men showed dramatically different risk-taking patterns than did women. Future research should address these considerations by investigating the effects of peer supervision during the risk-taking task.

The fact that self-esteem discrepancy did not predict risk-taking behavior for all participants might be due to the limitations of the risk-taking task. This study was limited by the nature of the BART, a purely luck-based, relatively boring task that did not reflect ability or skill. In previous research on ego threat and risk-taking, participants were instructed to bet on their performance on a future ability-related task. For example, participants have bet on skills such as video-game playing (Baumeister et al., 1993; Lambird & Mann, 2006) and grenade-throwing (Smith et al., 1999). Because performance on the BART has little relation to participants' skills or abilities (and thus sense of self-worth), it is possible that significant results supporting that self-esteem discrepancy predicts risk-taking did not emerge because individuals



did not find risky behavior on an unimportant task to ameliorate the negative effects of threat. For this reason, future studies might involve a risk-taking task that involves skill and thus has more relevance to participants' egos.

### **Response to Risk-Taking**

The fact that those with discrepant self-esteem, compared with those with secure self-esteem, were less likely to experience mood restoration following threat is unsurprising, given that participants with discrepant self-esteem were unlikely to report negative moods after the threat manipulation in the first place. Thus, the finding that those with discrepant self-esteem were less likely to report reversion to baseline physiological measures is understandable; because those with discrepant self-esteem failed to report negative affect after threat, they similarly did not experience a dramatic reduction in negative feelings because they were already near to their baseline mood levels. It is interesting to note that given this finding, one might expect people with discrepant self-esteem to display relatively few mood changes in a variety of contexts, at least ones in which negative moods might be induced. Certainly, however, this expectation might not hold if people with discrepant self-esteem are truly affected by a threat. Perhaps those with discrepant self-esteem were not upset by the threat because they had mitigated its effect by deflecting the negative feedback or by rendering it unimportant (Jordan et al., 2003).

However, if people with discrepant self-esteem were, in fact, affected by the threat manipulation, they might be unlikely to report negative moods. The mood assessments in this study were self-report measures, and thus susceptible to a variety of self-presentational biases to which those with discrepant self-esteem might be especially vulnerable (Schröder-Abé et al., 2007). For this reason, future researchers might consider using an indirect means of mood assessment that might capture the "true" moods of those with discrepant self-esteem. For

example, to assess participants' moods indirectly, a study might include a sentence-unscrambling task, in which participants have the opportunity to unscramble sentences that can have both positive and negative word configurations. The proportion of sentences that participants unscramble in a positive configuration would be an indirect measure of positive mood.

Another limitation of this study was the lack of a control group that engaged in a non-risk-related task following the threat manipulation. In this study, I considered the emotional and physiological effects of risk-taking after the manipulation, assuming that any changes in emotional and physiological states pre- and post-risk-taking were due to the act of risk-taking itself. However, this model fails to consider the effect of time on restoration to emotional and physiological baselines. In other words, time alone might be enough to restore mood to baseline levels following threat, and risk-taking may not be effective (or may even be counterproductive, for some) in mood repair. Thus, future studies should address this limitation by including a non-risk-taking control group that participates in a distracter task following the manipulation.

Interestingly, in terms of physiological response to threat, those with discrepant self-esteem showed more dramatic heart rate decrease compared with those with secure self-esteem. As shown by the heart rate change scores following 20 BART trials, discrepant self-esteem predicted heart rate restoration after risk, such that those with discrepant self-esteem were more calm as a result of risk-taking. The finding that risk-taking was more physiologically rewarding for those with discrepant self-esteem might explain the propensity for those with discrepant self-esteem (or at least men with discrepant self-esteem) to use risk as a means of repairing the negative consequences of ego threat.

## **Mental Health**

My hypotheses concerning the mental health variables were not supported: namely, self-esteem discrepancy was not associated with poor mental health, and mental health did not moderate the effect of self-esteem discrepancy on risk-taking. The lack of findings might be explained by the fact that self-report measures were used for both the explicit self-esteem measure and the mental health measures, and self-presentational motivations factor into both scales in similar manners. In other words, those who are unlikely to report having negative self-views are also unlikely to report experiencing negative mental health symptoms. Thus, the main effect of explicit self-esteem on mental health variables is unsurprising. Most likely, the effects of self-presentational motivations are similar for people when they fill out measures of explicit self-esteem and measures of mental health. Those with discrepant self-esteem, then, may be unwilling to report negative feelings related to depression and anxiety. It is interesting to consider whether being asked similar questions related to mental health in an interview format rather than in a self-report format would affect the mental health scores. Furthermore, it is also important to consider whether behavioral methods of assessing mental health, such as behaviors reported by a family member or significant other, might highlight the self-presentational nature of self-report mental health surveys.

An interesting finding in the analyses was that among those with low explicit self-esteem, those with lower implicit self-esteem tended to report more symptoms of anxiety. This finding suggests that having high implicit self-esteem serves as a buffer against anxiety-related feelings and behaviors. The findings of this study suggest that having low explicit, low implicit self-esteem predicts having either more negative affect, or being more willing to report negative affect. This pattern for those with globally low self-esteem (low explicit, low implicit) emerges

in a variety of the other dependent variables. Those with low explicit and low implicit self-esteem tended to feel much worse after threat, but did not engage in especially risky behavior as compared to those with low explicit, high implicit self-esteem. Furthermore, even though they were not especially risky, the globally low self-esteem participants reported the most dramatic mood repair following the BART. These findings suggest that people with globally low self-esteem are more likely to report dramatic mood changes or are in fact more emotionally responsive than are people with other self-esteem subtypes.

### **Future Research**

Given the notion that men tend to be riskier than women in general (Byrnes et al., 1999), and that the results of this study suggest that men with discrepant self-esteem tend to be riskier than women with discrepant self-esteem, future research should investigate these differences empirically. For example, do men and women respond to different types of threat through risk-taking? Because research supports the idea that men and women have different motivations for gambling behavior, such that men gamble to enhance self-esteem, whereas women gamble to ameliorate negative emotional experiences (Ledgerwood & Petry, 2006), one might expect women and men to engage in risk differently based on both circumstances prior to risk-taking opportunities, and the types of risk-taking opportunities provided. Perhaps women are riskier in response to threat when the threat is emotional in nature, and when the risk-taking opportunity contains an emotional element, such as a woman responding to social rejection through unsafe sexual behavior. In addition, how do peer effects (Gardner & Steinberg, 2005) factor into these gender differences? Future research should approach whether experimentally-manipulated threat induces men's versus women's risky behavior in real-world risk situations, such as drug and alcohol abuse or extreme sports, in the presence and absence of peers.

## **Implications**

This study adds to the growing body of research that challenges the notion that self-esteem can be conceptualized on a single dimension ranging from “high” to “low.” The idea that self-esteem is a complex, multi-dimensional construct has numerous implications. First, the idea that those with discrepant self-esteem are unlikely to report negative feelings conveys important information about the ways in which self-esteem discrepancy and self-presentation are intertwined. Although those with discrepant self-esteem may truly not register having negative feelings, it is critical for practitioners to consider the ways in which those with discrepant self-esteem acknowledge (or fail to acknowledge) their negative feelings. Clients should be encouraged to explore methods that enable them to process these feelings, should such feelings surface. Future research should also explore the psychological and quality-of-life-related outcomes of having depressive realism (typical of the people with low explicit, low implicit self-esteem) versus the outcomes of having more positive, perhaps illusorily positive, self-assessments. Given that those with low explicit, low implicit self-esteem reported the most symptoms of anxiety, the most dramatic negative mood increase following threat, and consequently the most mood repair through risk-taking, interventions for those with globally low self-esteem should employ alternative ways of interpreting threat. Essentially, those with globally low self-esteem feel better after opportunities for risk (or perhaps merely after the passage of time) but are not especially risky; for this reason, therapeutic techniques for those with globally low self-esteem should focus on their emotional response to threat.

Another implication of this study is the tentative finding that men with discrepant self-esteem are especially likely to engage in gambling-related risks. The practical applications of this finding are numerous: Practitioners, educators, and mentors should keep in mind the particular

susceptibility that boys and men have to risk-taking following threat. Therapists treating those with gambling addictions and other risk-seeking behavioral problems should also explore the ways in which male clients in particular respond to threat. Furthermore, are different types of risk-taking more effective in restoring the emotional and physiological states of those with discrepant self-esteem? Interventions should target the exploration of alternative, less-dangerous ways to contend with threats to self-esteem.

### **Conclusion**

The current study added to the body of research highlighting the misconception of the holistic value of high (explicit) self-esteem. Contradicting the notion that high self-esteem is necessarily desirable, this research supports the notion that those with high explicit self-esteem, when it is coupled with low implicit self-esteem, might be unlikely to express their true feelings (and thus, might experience negative consequences for their physical and mental health, as suggested by Schröder-Abé et al. (2007)). Furthermore, among men with high explicit, low implicit self-esteem, threat might incite self-protective mechanisms that trigger risk-taking behavior, identifying another potential maladaptive correlate of high self-esteem. The current study highlights the importance of considering multiple dimensions of self-esteem.

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