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Who Tries to Self-Improve After an Academic Failure? Trait Self-Esteem Differences
and the Mediating Role of Self-Esteem Distancing Processes

by

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Abstract

Who Tries to Self-Improve After an Academic Failure? Trait Self-Esteem Differences and the Mediating Role of Self-Esteem Distancing Processes

Fernanda Chardulo Dias De Andrade

The present study examined whether individual differences in implicit and explicit trait self-esteem influenced students' self-improvement effort after receiving feedback that their verbal ability was at or well-below average. This study also examined whether certain self-distancing strategies facilitated or hindered practice effort. Regardless of implicit self-esteem, participants with lower explicit self-esteem invested superior effort after receiving below-average, compared to average, feedback. Participants with high self-esteem did not differ by condition. Additional analyses revealed that participants who scored well-below average reported lower state self-esteem, which in turn related to higher academic contingencies and superior practice effort. Albeit limited, these findings support the contention that more is not better when it comes to self-esteem, as neither higher trait nor state self-esteem promoted superior self-improvement effort after failure. Future research is needed to uncover the influence of implicit self-esteem and better understand the role of distancing strategies on self-improvement effort.

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Chapter One:

Introduction

Failing an important exam, receiving negative feedback from an instructor, being rejected by a graduate school; these are just a few examples of academic threats that most college students experience in their academic careers. More important than the threat, however, is the way students respond to such events, as some responses can be more adaptive than others. For example, while one student who fails an important exam may choose to study harder for the next assessment, another student may lose motivation and choose to drop the course.

One predictor of how students deal with academic threats is trait self-esteem. For example, after academic threats, individuals with high trait self-esteem tend engage in a host of maladaptive strategies, such as insufficiently practicing before a test (Baumeister & Tice, 1985), doubting the accuracy of negative feedback (Bosson & Swann, 2012), setting overly optimistic goals (Baumeister, Heatherton, & Tice, 1993), and reducing the importance of academic competence after a disappointment (Buckingham, Weber, & Sypher, 2012; Study 2). At the same time, individuals with low trait self-esteem have been found to become less motivated to appear competent to others (Park, Crocker, & Kiefer, 2007), less optimistic about their future performance (Baumeister, Heatherton, & Tice, 1993), and more reliant on academic outcomes (Buckingham et al., 2012; Study 2).

More recently, however, studies have shown that self-report measures of self-esteem do not capture the full scope of behaviors and attitudes that emerge after academic threats (Andrade & Buckingham, 2017; Buckingham, Lam, Andrade, Boring, & Emery, in press; Lambird & Mann, 2009; Zeigler-Hill et al., 2013). Specifically, self-esteem has

been shown to be a heterogeneous construct composed not only of explicit feelings about oneself, but of implicit ones as well (Kernis, 2003), both of which influence how people respond to threats to self-esteem (Andrade & Buckingham, 2017; Buckingham et al., in press; Kernis, Lakey, & Heppner, 2008; Lambird & Mann, 2009). For example, having a combination of high explicit but low implicit self-esteem is related to decreased interest in self-improvement after an academic threat, whereas having high explicit and implicit self-esteem is not (Andrade & Buckingham, 2017).

In light of the possibility that both implicit self-esteem (ISE) and explicit self-esteem (ESE) influence students' motivation to self-improve after an academic failure, the first goal of this study was to replicate findings that different combinations of ESE and ISE influence the degree to which students stake their self-esteem on academic competence after an academic failure (academic contingency of self-worth). Second, this study aimed to explore whether these combinations of ESE and ISE influence another self-esteem distancing strategy, namely reducing intellectual engagement via devaluing and discounting processes.

Finally, this study investigated whether different combinations of ESE and ISE predict participants' effort to self-improve after an academic failure. In light of the possibility that distancing strategies can both facilitate and undermine one's motivation to persevere, the present study also explored whether changes in engagement processes and academic contingency of self-worth mediated students' efforts to self-improve.

Before reporting on this study's findings, I will first review studies on the role of explicit self-esteem on responses to threats to self-esteem, followed by a review of recent

studies suggesting that implicit self-esteem moderates the effect of explicit self-esteem on responses to self-threats, placing special focus on responses to academic threats.

Self-Esteem Differences and Consequences

People are highly motivated to pursue situations that foster positive self-evaluations while avoiding those that could engender unpleasant ones (Crocker & Wolfe, 2001). On a day-to-day basis, people use routine processes to maintain the positivity of their self-views despite minor events that threaten its stability (Alicke & Sedikides, 2009). While these processes can be self-enhancing, such as studying to get good grades or viewing oneself in a positive light, they can also be self-protective, such as studying to avoid bad grades. However, when faced with events that threaten to lower self-esteem below personally acceptable levels (e.g., failing a diagnostic exam), people become motivated to engage in cognitive and behavioral strategies that are more elaborate, and ultimately meant to restore self-esteem to tolerable levels while preventing further drops (Alicke & Sedikides, 2009). In either case, people can employ primary control (i.e., acting to solve a problem) or secondary control (i.e., engaging in attitudinal or memory strategies to deal with a problem). While secondary control may be employed when primary control fails, it may also be used when primary control efforts are deemed too difficult to implement or sustain (Alicke & Sedikides, 2009).

It is well-established in the self-esteem literature that the way people respond to threatening events is influenced by trait levels of self-esteem. Past studies have found that, after self-threats, high self-esteem (HSE) individuals minimize the importance of their weaknesses (Baumeister, Campbell, Krueger, & Vohs, 2003), ignore and/or doubt the accuracy of negative feedback (Bosson & Swann, 2012), and portray themselves in an

excessively positive light (Baumeister et al., 2003). In the academic domain, individuals with HSE have been found to display poor self-regulation after failure (Baumeister et al., 1993), and to distance themselves from an academic threat by reducing intellectual engagement (Zeigler-Hill et al., 2013) and the extent to which their self-esteem is contingent upon academic outcomes (Buckingham et al., 2012; Study 2).

In contrast, low self-esteem (LSE) individuals show less consistent responses to self-threats (Baumeister, 1993). On one hand, after threats to self-esteem, LSE individuals become more protective (Heimpel, Elliot, & Wood, 2006) and avoid situations that risk further humiliation, embarrassment, or loss of self-esteem (Tice, 1993). In the same vein, after an academic threat, LSE individuals feel less motivated to appear competent to others, possibly due to the risk of rejection associated with this approach (Park et al., 2007). On the other hand, a study by Buckingham et al. (2012) found that LSE people also increase the extent to which academic competence determines their self-esteem after an academic threat, leaving LSE individuals' self-esteem even more vulnerable to potential drops (Buckingham et al., 2012; Study 2).

The Role of Implicit Self-Esteem

Over the last few years, self-esteem researchers have attempted to understand the apparent contradictions in the responses of high and low self-esteem individuals. Specifically, while some studies suggest that higher self-esteem confers positive qualities such as better socioemotional functioning (Verschueren, Buyck, & Marcoen, 2001), positive affect, and life satisfaction (Baumeister et al., 2003), others suggest that higher self-esteem predicts self-aggrandizement (Baumeister, 1993), and maladaptive responses to threatening events, such as academic disappointments (Baumeister et al., 1993;

Buckingham et al., 2012; Zeigler-Hill et al., 2013). Equally contradictory, while threats to self-esteem lead LSE individuals to be more cautious, inhibited (Vohs & Heatherton, 2001), and protective of their self-esteem (Baumeister, 1993), they also lead LSE people to make their self-esteem more vulnerable to negative events (Buckingham et al., 2012).

One reason for this contradiction appears to be the sole reliance on explicit measures of self-esteem as a gauge of people's attitudes toward themselves (Greenwald & Farnham, 2000; Zeigler-Hill, 2006). Specifically, while explicit measures of self-esteem capture self-referent attitudes that are consciously perceived, other self-attitudes are automatic and non-conscious (Greenwald & Banaji, 1995; Greenwald & Farnham, 2000; Kernis, 2003). Thus, rather than openly reported, as is the case of explicit self-esteem, implicit self-esteem spills over and influences people's responses without their conscious intent (Jones, Pelham, Mirenberg, & Hetts, 2002).

The interaction between feelings and thoughts that are consciously and unconsciously experienced affects people's vulnerability to negative events. Individuals with self-esteem that is both implicitly and explicitly high (i.e., secure high self-esteem) can better accept themselves without the need to create positive illusions, and tend to have attitudes toward themselves that are realistic and resistant to threats. Consequently, this type of self-esteem is often classified as genuine or secure (Jordan, Spencer, Zanna, & Hoshino-Browne, 2003; Kernis, 2003).

However, individuals with high explicit self-esteem but low implicit self-esteem seek constant validation of their positive self-views, are more susceptible to threats, and preoccupied with protecting their vulnerable self-esteem (Kernis, 2003). Past research has shown that individuals with high explicit but low implicit self-esteem tend to react

defensively to threats to self-esteem (Jordan et al., 2003; Kernis et al., 2005; Kernis et al., 2008; Lambird & Mann, 2006; Zeigler-Hill, 2006), such that this subtype of fragile self-esteem is often referred to as defensive high self-esteem (Jordan et al., 2003).

Recent studies suggest the value of considering the role of both implicit and explicit self-esteem in predicting how people respond to threats to self-esteem (Andrade & Buckingham, 2017; Buckingham et al., in press; Lambird & Mann, 2006; Zeigler-Hill et al., 2013). Importantly, some of these responses may either boost or undermine people's motivation to self-improve in a threatened domain, which can have meaningful implications for how students navigate their academic pursuits. To be exact, explicit and implicit self-esteem may interact in predicting three different responses to academic threats: (1) academic contingency of self-worth, (2) intellectual engagement, and (3) preparatory effort.

Self-Esteem and Responses to Self-Threats

Reducing contingencies of self-worth. One way to deal with threats to self-esteem is by changing the extent to which one's self-esteem is influenced by outcomes in the threatened domain (i.e., increasing or reducing one's contingencies of self-worth). For example, Buckingham et al. (2012) showed that, compared to those in the control condition, individuals with HSE discounted the importance of being approved by others after they recalled a time when they were rejected, whereas individuals with LSE increased the importance of being accepted (Study 1). In the same vein, compared to control participants, HSE individuals who recalled an academic disappointment placed less importance on academic outcomes, whereas those with LSE placed more (Study 2).

More recently, Buckingham et al. (in press) showed that individuals with defensive HSE (i.e., high explicit but low implicit self-esteem) respond differently from those with secure HSE (i.e., high explicit and high implicit self-esteem) in terms of how much they stake their self-esteem on a threatened domain. Specifically, Buckingham et al. (in press; Study 3) found that individuals with defensive HSE decreased the importance of being socially approved (i.e., approval CSW) after recalling a time when they were rejected by others. Conversely, individuals with secure HSE did not differ from each other regardless of whether they recalled a time when they were rejected or did not (Buckingham et al., in press). These findings suggest that secure HSE individuals' self-attitudes are well-anchored and resistant to threats, while those of defensive HSE people are more shallow and fragile (Kernis et al., 2008).

Motivation to self-improve. While Buckingham et al. (in press) investigated responses to a social threat, an unpublished study by Andrade and Buckingham (2017) found that different combinations of implicit and explicit self-esteem predicted students' motivation to improve their academic skills after an academic threat. Specifically, when Andrade and Buckingham's (2017) model included only explicit self-esteem and condition (academic failure vs. control), the interaction between condition and explicit self-esteem did not predict participants' preference to perform a subsequent task framed as an opportunity to improve their academic ability. However, when implicit self-esteem was added to the model, the researchers found that participants with defensive HSE (i.e., high explicit but low implicit self-esteem) were more averse to the subsequent academic task compared to those in the control condition, whereas participants with secure HSE

(i.e., high implicit and explicit self-esteem) were not more nor less interested in performing the self-improvement task (Andrade & Buckingham, 2017).

Interestingly, among participants with low explicit self-esteem, those with low implicit self-esteem (i.e., congruent LSE) became more interested in improving their academic skills if they had previously failed the academic test, whereas those with high implicit self-esteem (i.e., incongruent LSE) were equally interested in self-improvement regardless of condition (Andrade & Buckingham, 2017). Note that the response of individuals with incongruent LSE is similar to that of individuals with secure HSE. This pattern is in line with the contention that high implicit self-esteem buffers one's self-esteem against the negative effects of threats (Kernis et al., 2008).

Preparatory effort. Self-esteem differences also influence the extent to which people practice in preparation for an upcoming assessment. For example, a study by Baumeister and Tice (1985) showed that people's responses to success or failure on an ostensible "national standardized assessment of technique" (p. 456) depended on participants' trait self-esteem levels.

Specifically, after success, LSE individuals lost interest in the subsequent task, which the authors attributed to LSE individuals' fear of potential failures carried by additional attempts at success (Baumeister & Tice, 1985). Conversely, after failure, LSE individuals felt highly motivated to work on the subsequent task, especially if the failure was humiliating. While it may appear contradictory that LSE individuals were motivated to persevere despite the risk of failure, persevering may allow LSE individuals to remedy their deficits, even if only to the extent necessary to achieve acceptable levels of competence (Baumeister & Tice, 1985).

On the other hand, Baumeister and Tice (1985, Study 1) found that HSE individuals only felt motivated to work on a future task if they had previously succeeded at the similar task. After failure, however, HSE individuals' intrinsic motivation fell and they spent less time working on the subsequent task, regardless of whether the failure was humiliating or accompanied by a face-saving excuse. Whereas Baumeister and Tice (1985) concluded that HSE individuals were not threatened by the failure and thus did not feel the need to devote efforts to achieve excellence, it is also possible that HSE individuals became defensive after the threat and employed secondary control to distance themselves from the negative feedback. However, without measuring implicit self-esteem and examining the responses of secure and defensive HSE people, it is impossible to safely conclude which was the case.

To address this question, Lambird and Mann (2006) attempted to replicate an earlier experiment by Baumeister et al. (1993) in which participants completed an ostensive intelligence test predictive of "posteducational, occupational, and general life success" (p. 149). After receiving feedback that their intelligence was among the top or bottom of scores, participants were given the chance to bet on their subsequent performance on the same task they previously failed or succeeded. While Baumeister et al. (1993) categorized participants in terms of explicit self-esteem, Lambird and Mann (2006) categorized them in terms of both explicit and implicit self-esteem, which was measured using the Implicit Associations Test (IAT; Greenwald & Farnham, 2000).

Interestingly, whereas Baumeister et al. (1993) found that, regardless of feedback type, HSE individuals chose to bet more money on their future performance than LSE individuals, Lambird and Mann (2006) did not find a main effect of explicit self-esteem.

They did, however, find an interaction between the implicit and explicit measures, such that participants with high explicit and low implicit self-esteem (i.e., defensive HSE) displayed worse self-regulation after the threat than those with high explicit and implicit self-esteem (i.e., secure HSE; Lambird & Mann, 2006). That is, despite a previous failure, defensive HSE individuals unrealistically overestimated their future performance by making excessive bets on themselves.

Intellectual engagement processes. Similar to reducing how much self-esteem is contingent upon a given domain, reducing intellectual engagement is a form of secondary control that refers to the processes through which people distance themselves from a threat by detaching their self-esteem from threatening feedback (Schmader, Major, & Gramzow, 2001). Reducing engagement and reducing CSW are similar responses in that both allow individuals to distance themselves from a threat by reducing the impact of the outcome on individuals' self-esteem. However, they do not necessarily imply the same underlying processes. That is, reducing CSW means to reduce the extent to which feelings of self-esteem hinge upon academic achievements; it does not mean, however, that an individual devalues the domain or discounts the validity of the feedback in that domain. Reduced engagement, however, is accomplished via devaluing and discounting the validity of the threat (Schmader et al., 2001).

In a practical example, although an academic failure may lead an individual to reduce the extent to which his or her self-esteem depends on academic outcomes, he or she may still believe in the importance of academic competence and the validity of the negative feedback. In this case, the individual may experience lower academic CSW but not lower intellectual engagement. Therefore, while not the same, reducing CSW and

reducing engagement are part of a family of responses that allow people to attempt to self-protect by distancing their self-esteem from negative events or feedback.

The literature on negative stereotypes and intellectual engagement indicates that reduced engagement can have negative consequences for stigmatized populations by decreasing their motivation to persevere (Major & Schmader, 1998; Steele, Spencer, & Aronson, 2002). A study by Nussbaum and Steele (2007), however, showed that temporarily detaching self-esteem from academic ability allowed negatively stereotyped participants to be more persistent. More recently, a study by Leitner, Hehman, Deegan, and Jones (2014, Study 4) found that reduced engagement buffered participants' self-esteem from the negative effects of a threat.

Specifically, participants in Leitner et al.'s (2014) Study 4 completed a measure of adaptive disengagement (Adaptive Disengagement Scale; Leitner et al., 2014; "When I perform poorly at something, I do my best to keep a positive sense of self-esteem"), and a measure of trait self-esteem. Several weeks later, participants in the threat condition were led to believe that a confederate with whom they had just interacted felt hesitant and ambivalent about the participant. Conversely, participants in the positive condition were led to believe that the confederate had a positive impression of them.

Among participants who received negative feedback, having higher adaptive disengagement predicted higher implicit disengagement, which in turn protected participants' state-self-esteem from the negative effects of the threat (Leitner et al., 2014, Study 4). In addition, although greater adaptive disengagement predicted implicit disengagement, it did not predict a reduction in social goals (Leitner et al., 2014), which suggests that reduced engagement is not necessarily accompanied by a change in one's

overarching goals. That is, temporarily disengaging self-esteem from certain outcomes may allow people to protect their self-esteem without changing their overarching objectives (Leitner et al., 2014). This was the case even when explicit trait self-esteem was entered as a covariate.

It is worth noting that although Leitner et al. (2014, Study 4) reported that explicit trait self-esteem did not covary with adaptive disengagement to predict state self-esteem, the authors only measured explicit self-esteem. In light of recent research suggesting that implicit self-esteem moderates the effect of its explicit counterpart (Andrade & Buckingham, 2017; Buckingham et al., 2012), it is possible that Leitner et al.'s (2014, Study 4) findings would have been more characteristic of individuals with some types of self-esteem but not others.

The literature on self-esteem is rich with enlightening examples of the many implications of trait self-esteem differences. However, the focus on differences between high and low self-esteem individuals treats members of heterogeneous groups as equivalent to each other (Jordan et al., 2003). Thus, a complete understanding of the processes guided by trait self-esteem requires the assessment of both implicit and explicit levels of self-esteem (Jordan et al., 2003; Kernis et al., 2008). Such approach may not only reveal a more nuanced picture of the implications of self-esteem differences, but it may also expand and clarify many contradictory results found in the current literature (Lambird & Mann, 2006).

The Present Study

Past studies have begun to show that different combinations of implicit and explicit self-esteem influence the way people respond to events that threaten their

feelings of competence, potentially interfering with their ability and motivation to self-improve (Andrade & Buckingham, 2017; Lambird & Mann, 2006; Zeigler-Hill et al., 2013). But what comes after? Does self-reported motivation to self-improve translate into behaviors? And do certain cognitive responses to threats, such as detaching one's self-esteem from academic outcomes, facilitate or impair students' behavioral efforts to self-improve?

These are pertinent questions as academic disappointments are inevitable occurrences for most college students. After a disappointing test performance, for example, students may perceive that their ability to succeed in a course is limited, consequently engaging in secondary control (e.g., reducing engagement and extent to which self-esteem is contingent upon academic outcomes) to protect their self-esteem. Such strategies may, however, influence students' subsequent motivation and capacity to improve themselves on subsequent assessments.

Trait self-esteem and distancing strategies. In light of this possibility, the first purpose of the present study was to investigate whether different combinations of implicit and explicit self-esteem moderated the effect of an academic threat on distancing strategies, such as reducing academic contingencies of self-worth (academic CSW) and intellectual engagement. The second goal of this study was to explore whether these distancing strategies facilitated or undermined the extent to which students attempted to self-improve by practicing ahead of a subsequent assessment.

Based on Alicke and Sedikides's (2009) model, in the absence of an academic threat, I expected participants to employ basic, self-enhancing strategies aimed at maintaining the positivity of their self-views—rather than self-protective strategies aimed

at defending their self-esteem from threatening events. Thus, I expected congruent LSE participants in the control (i.e., non-failure) condition to display moderately low academic CSW and engagement, as both strategies would allow congruent LSE participants to buffer their self-esteem from potential threats by reducing the threat's impact on self-esteem.

The opposite would be the case among defensive HSE individuals, who I expected to display relatively high academic CSW and engagement in the control condition. That is, due to their tendency to self-aggrandize, see themselves in an excessively positive light (Leitner et al., 2014), and the fact that they did not previously fail an academic task, defensive HSE individuals may not expect themselves to fail a subsequent assessment. In this case, having high CSW and engagement may be a more favorable strategy as it increases the positive impact of future successes. Similarly, I expected incongruent LSE and secure HSE individuals in the control condition to display moderately high CSW and engagement, as this approach would also allow them to boost the positivity of their self-views in case of success.

However, I expected an academic threat to change this pattern. Specifically, based on Buckingham et al.'s (2012) findings, I expected an academic threat to lead LSE individuals to increase the extent to which their self-esteem hinges upon academic outcomes by displaying higher academic CSW and intellectual engagement (i.e., lower levels of devaluing and discounting) than LSE individuals in the control condition. While it is possible that individuals with congruent LSE will differ from those with incongruent LSE in level of academic CSW and engagement, there is not enough information in the literature to hypothesize which group is more likely to display higher levels of CSW.

On the other hand, I expected that a threat would lead defensive HSE individuals to distance their self-esteem from the negative outcome by reducing their academic CSW and engagement. Because secure HSE and incongruent LSE individuals have well-anchored implicit self-attitudes that are more resistant to threats (Jordan et al., 2003; Kernis et al., 2003), I expected that these individuals would display equal academic CSW and engagement in both the threat and control conditions.

Trait self-esteem and self-improvement. Secondly, distancing responses may have implications for people's subsequent motivation to self-improve. Specifically, while distancing one's self-esteem from academic outcomes may decrease motivation and be costly for achievement (Major & Schmader, 1998; Osborne, 1995; Osborne, 1997), it may also free the individual to persevere in that domain, as negative outcomes become less harmful to one's self-esteem (Nussbaum & Steele, 2009).

In the absence of threat, I expected congruent LSE individuals to devote moderate efforts to practicing in advance (i.e., practice less than those in the threat condition), as any preparation would decrease their chances of failure and loss of self-esteem. Similarly, due to their low explicit self-esteem, I also expected incongruent LSE individuals to moderately practice before the test, albeit less than those with congruent LSE.

Owing to their secure sense of self-esteem, in the absence of threat, I expected secure HSE individuals to be inherently motivated to improve themselves by moderately practicing prior to the test. Conversely, I expected defensive HSE individuals to moderately self-handicap by practicing less than those with congruent LSE, secure HSE, and incongruent LSE. By self-handicapping, defensive HSE individuals can maintain the

positivity of their self-views by receiving more credit for success and less blame for failure (Baumeister et al., 1989; Brown, Collins, & Schmidt, 1988; Tice, 1991).

Again, I expected this pattern of responses to change after an academic threat. Drawing from Andrade and Buckingham's (2017) findings that congruent LSE individuals who failed an academic test displayed increased preference to perform a task framed as an opportunity to improve their academic abilities, I expected that congruent LSE individuals would perform even more practice trials in the threat condition.

Further support for this hypothesis stems from Buckingham et al.'s (2018) findings that, after recalling a disappointing event, congruent LSE individuals increased the extent to which their self-esteem was contingent upon outcomes in the threatened domain (i.e., increased CSW). In this case, it is unlikely that congruent LSE individuals would behave in ways that increase their chances of further damaging their self-esteem (i.e., failing the subsequent test due to insufficient practice), as increasing CSW makes self-esteem more vulnerable to subsequent academic threats.

Conversely, secure HSE individuals, whose self-esteem is less vulnerable to negative events, may not differ in the extent to which they practice in the presence or absence of an academic threat. That is, due to their secure sense of self-esteem, secure HSE individuals may not perceive that failing a test is a reflection of poor skills, despite the extent to which they practice in advance. Thus, while secure HSE individuals may be inherently motivated to self-improve (i.e., practice in advance) due to higher confidence in their abilities, I did not expect the academic threat to influence their preparatory efforts. While it is possible that, regardless of condition, incongruent LSE individuals

will equally practice due to the buffering effect of having high implicit self-esteem, there is not enough information in the literature to hypothesize whether this is the case.

Finally, based on past research suggesting that defensive HSE individuals favor self-aggrandizing responses following failure (Bosson, Brown, Zeigler-Hill, & Swann, 2003), and tend to self-handicap (e.g., choosing to listen to distracting music; Lupien, Seery, & Almonte, 2010), I anticipated that the academic threat would lead defensive HSE individuals to practice even less than all other individuals in the threat and control conditions.

The mediating role of distancing. Finally, as previously alluded, it is possible that self-esteem-distancing responses, namely reducing CSW and intellectual engagement, mediate the extent to which participants practice after the academic threat. Thus, the present study also aimed to investigate whether the cognitive changes that follow the academic threat mediate how much participants practice for an upcoming task in an effort to self-improve.

Two possibilities arise. On one hand, increased CSW and engagement may lead to increased practice to protect one's self-esteem from the damaging effects of a threat, as both cognitive processes make one's self-esteem more vulnerable to negative outcomes. On the other hand, increased CSW and engagement may lead people to increased practice because succeeding in the threatened domain is now predictive of higher self-esteem than before. That is, increased CSW and engagement may become a source of motivation because both processes also increase the extent to which one's self-esteem is influenced by positive outcomes.

Two possibilities also arise in the case of decreased CSW and engagement. On one hand, decreased CSW and engagement may lead to decreased practice, as participants may become less motivated to improve themselves in a domain that they now perceive to be unimportant. On the other hand, reducing CSW and engagement may allow participants to try harder (i.e., practice more), as their self-esteem is now less influenced by academic outcomes.

The present study aimed to determine which is the case and which subtypes of self-esteem are more likely to favor one response over another. For example, while it appears that reducing CSW is a maladaptive response adopted by individuals with defensive HSE (Buckingham et al., in press), such strategy may be adaptive if it facilitates self-improvement. Exploring the implications of self-esteem distancing processes would help answer questions about the valence of reducing CSW (Buckingham et al., in press).

In the real world, although students are required to follow certain paths without choice, they have some freedom to choose which classes to take, drop, and which majors to pursue; all of which can be influenced by academic outcomes. By examining students' responses to an academic failure, the present study aimed to add to past research by showing that different combinations of implicit and explicit self-esteem influence students' subsequent efforts to self-improve, as well as the underlying processes that guide such efforts. Although both defensiveness and self-improvement have been shown to protect and increase state self-esteem (Nussbaum & Dweck, 2008), self-improvement may be a more adaptive strategy as it enables students to work harder toward superordinate academic goals.

Chapter Two:

Method

Design

This study followed a between-subjects design. Predictor variables were Condition (Threat vs. No Threat), explicit self-esteem (ESE), and implicit self-esteem (ISE). Outcome variables were state self-esteem, academic CSW, intellectual engagement processes (i.e., devaluing and discounting), practice time, number of practiced questions, and practice index.

Participants

Participants were obtained from Towson University's Psychology Research Pool. To explore the impact of academic failures on college freshmen, and control for the possibility that more advanced students may be able to guess the true purpose of this study, only students in introductory psychology courses were invited to participate. Based on Andrade and Buckingham's (2017) effect size of $f^2 = 0.39$ for the ESE X ISE X Condition effect, 80% power, and .01 probability level, this study required a sample of 64 participants per condition, for a total of 128 participants. Participants were 200 undergraduate students recruited via Towson University's Psychology Research Pool. Twenty-one cases were removed from the dataset due to: technical difficulties with the software (two cases), reportedly skipping the RAT feedback page (one case), being debriefed before the end of the study (one case), presence of two sets of data with the same participant code (one case), and failed attention and manipulation checks (17 cases).

Attention checks consisted of two questions, randomly presented during the Contingencies of Self-Worth questionnaire and Intellectual Engagement Inventory,

asking participants to check “*strongly disagree*” to indicate that they were paying attention to the text. Participants were removed if they did not respond “*strongly disagree*” to both of the attention checks.

Manipulation checks were two questions at the end of the survey to which participants had to report (1) their score on the verbal test (open ended), (2) and whether their score was *above average*, *average*, or *below average* (multiple choice). Participants were removed if they incorrectly answered both manipulation checks. Responses were considered incorrect for participants assigned to the Treat condition if they reported that they scored above 3 on the verbal test, or that their scores were *at* or *above* the average. Responses were considered incorrect for participants in the No Threat condition if they reported that their scores were below 5 or above 7 points, or that their scores were *below* the average.

The final sample consisted of $N = 178$ participants (37 males, 141 females) aged between 18 and 46 years old ($M = 18.90$, $SD = 2.96$). Participants were 57.9% Caucasian ($n = 103$), 21.9% Black or African American ($n = 39$), 6.2% Latino or Hispanic ($n = 11$), 6.7% Asian ($n = 12$), and 7.3% other ($n = 13$).

Removed participants ($n = 22$) were significantly older ($M = 19.33$, $SD = 1.65$) than those who were retained ($M = 18.85$, $SD = 3.28$), Mann-Whitney $U = 1465.00$, $p = .027$, but were no more likely to be in the Threat or No Threat condition than retained participants, Wald $\chi^2(1) = 0.72$, $p = .395$. Removed participants practiced significantly fewer questions ($M = 2.52$, $SD = 4.12$) than those who were retained ($M = 4.55$, $SD = 4.20$), Mann-Whitney $U = 1085.00$, $p = .001$. Although it is possible that removed participants were inherently different from those who were retained (i.e., less motivated

to read and answer the questionnaires), it is impossible to determine whether this was the case based on their answers to the questionnaires, as the majority of those who were removed failed the attention checks. That is, it is unlikely that removed participants' answers were accurate reflections of their thoughts and feelings if they did not carefully read and answer the survey. Therefore, the following analyses were only performed on the answers of participants who did not fail the attention or manipulation checks, as these participants' answers are more likely to have been thoughtful and deliberate.

Measures

Consent form. The consent form (Appendix A) did not reveal the true purpose of this study, as this knowledge may have influenced participant's responses to the questionnaires as well as their investment in the practice questions. Instead, following the procedures of Andrade and Buckingham's (2017) study, participants were informed that the purpose of this study was to examine the relationship between personality and verbal ability.

Explicit self-esteem. In line with Buckingham et al.'s (2012; in press) and Andrade and Buckingham's (2017) studies, trait self-esteem was assessed using the Self-Liking subscale (SL) of the Self-Competence Self-Liking Scale (SCSL; Tatarodi & Swann, 2001). This measure consists of eight items (e.g., "I am secure in my sense of self-worth") rated on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), such that higher scores indicate higher self-liking. The scale is internally consistent, $\alpha = .91$.

Implicit self-esteem. Based on the procedure followed by Andrade and Buckingham (2017), implicit self-esteem was assessed using the Initials Preference Task

(IPT; Nuttin, 1987), a commonly used measure of implicit self-esteem that assesses participants' liking of their first and last name's initials in relation to their liking of all other letters of the alphabet not contained in their first or last names (LeBel & Gawronski, 2009). In this task, participants were asked to rate how much they like each of the 26 letters of the Roman alphabet on a scale from 1 (dislike a great deal) to 7 (like a great deal). To control for aesthetic preferences, letters were presented capitalized and using sans-serif font (Hoorens, Takano, Franck, Roberts, & Raes, 2015). Also in line with Andrade and Buckingham's (2017) procedure, letters were presented individually and in random order.

Scores were calculated using the ipsatized double-corrected algorithm due to its superior psychometric properties (LeBel & Gawronski, 2009). To obtain a participant's score, his or her mean rating of all non-initial letters were first computed, and then subtracted from the participant's ratings of his or her first and last name initials. A normative letter baseline was then calculated by computing the mean of each letter's ratings from all participants whose first and last names do not begin with a given letter (for instance, the baseline rating of the letter C is obtained by computing the mean rating of C across all participants whose first or last names do not begin with the letter C). Two scores were then computed for each participant, both of which were obtained by subtracting the normative letter's baseline from the ipsatized initials' ratings. In the present study, initials preference scores and reliability were calculated using an SPSS syntax developed by LeBel and Gawronski (2014). Higher scores on the IPT indicate better liking of one's first and last initials over all other letters not included in one's name (i.e., higher implicit self-esteem). Cronbach's alpha for the ratings of the first and last

initials was .49. Although low, this value is comparable to past studies: alpha was .53 in Andrade and Buckingham's (2017) study, .42 in Zeigler-Hill's (2006), and .58 in Hoorens et al.'s (2015). The bivariate correlation between the two sets of scores (one for the first name's initial and one for the last name's initial) was $r = .30, p < .001$.

Trait academic contingencies of self-worth. Trait level of academic contingency of self-worth was assessed using Lawrence and Crocker's (2009) Academic Contingencies of Self-Worth scale, which consists of six items rated on a 6-point scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). This scale differs from Crocker et al.'s (2013) Contingencies of Self-Worth Scale in that it omits the term "self-esteem" and refers to specific academic outcomes. Sample items include "I would feel like a loser if I were to receive a poor grade in a class," and "I would feel worthless if I were to do poorly on a standardized achievement test." Scores were computed so that higher values indicate higher trait academic contingency of self-worth, $\alpha = .81$.

Test of intellectual ability (experimental manipulation). Following the procedure of Andrade and Buckingham's (2017) study, the test of intellectual ability consisted of 12 items from the Remote Associates Test (RAT). The RAT requires participants to generate a word that is associated with a set of three other words (e.g., for the set *cast—side—jump*, the related word is *broad*).

Items used in the present study's Threat and No Threat conditions were selected from a pilot study with 24 undergraduate students (20 females, 4 males; $M_{age} = 18.54$, $SD = 1.18$) recruited from the Psychology department's research pool. Participants completed one of three versions of the RAT: a difficult version, a moderately easy version, and an easy version. Participants randomly assigned to the difficult version ($n = 8$) were told that

they correctly answered 2 out of 12 items, whereas those randomly assigned to the moderately easy ($n = 8$) and very easy versions ($n = 8$) were told that they correctly answered 6 out of 12 items. All versions were designed based on difficulty ratings obtained by Bowden and Jung-Beeman (2003), and included three very easy items (i.e., items which 85-100% of participants can correctly answer within 15 seconds) at the beginning of the session. In addition to the 3 very easy items, the difficult version included 9 very difficult items (i.e., items which fewer than 20% of participants can correctly answer within 15 seconds), the moderately easy included 9 moderately difficult items (i.e., items which 25-45% of participants can correctly answer within 15 seconds), and the very easy version included 9 easy items (i.e., items which 65-80% of participants can correctly answer in 15 seconds; Bowden & Jung-Beeman, 2003). All items were individually presented on a computer screen for 20 seconds or until participants provided an answer. Participants' scores on the very difficult ($M = 2.29$, $SD = 0.49$) and easy versions of the RAT ($M = 5.75$, $SD = 3.49$) most closely approximated the bogus feedback they received, therefore, these two versions of the RAT were selected to compose the Threat and No Threat conditions, respectively.

Participants in the pilot study's Threat condition answered, on average, 7.13 ($SD = 4.05$) questions and scored, on average, 2.29 ($SD = 0.49$). Participants in the pilot study's No Threat condition answered, on average, 8.78 ($SD = 2.28$) questions and scored, on average, 5.75 ($SD = 3.94$).

State self-esteem. Drawing from Andrade and Buckingham's (2017) study, state self-esteem was measured using Leary et al.'s (1995) Self-Feelings scale. The scale consists of 12 bipolar adjectives (e.g., "good—bad") that assess how participants

currently feel about themselves, such that higher scores indicate higher explicit state self-esteem. Half the items were presented with the positive adjective anchored at the left-end of the scale, and half with the positive adjective anchored at the right-end of the scale.

The scale is internally consistent, $\alpha = .95$.

Contingencies of self-worth. In line with Buckingham et al.'s (2012, in press) studies, state level of academic contingency of self-worth (Academic CSW) was measured using the academic subscale of Crocker et al.'s (2003) Contingencies of Self-Worth scale. The subscale consists of five items ranked on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*; e.g., "My self-esteem is influenced by my academic performance"). Higher scores indicate higher academic contingency, $\alpha = .76$.

In addition to items from the academic subscale, items pertaining to the Virtue, Approval, and Appearance subscales were included to disguise the purpose of the study. Cronbach's α values ranged from .75 to .84.

Intellectual engagement processes. Based on Schmader et al.'s (2001) research, changes in intellectual engagement were assessed in terms of its underlying psychological processes: Devaluing and Discounting. These processes were measured using Major and Schmader's (1998) 12-item Intellectual Engagement Inventory (IEI), which is composed of three subscales: Devaluing (five items; e.g., "It usually doesn't matter to me one way or the other how I do in school"), Discounting (four items; e.g., "Most intelligence tests do not really measure what they are supposed to."), and Disengagement (three items; e.g., "I don't really care what tests say about my intelligence"). To draw comparisons between disengagement and contingencies of self-worth, all three subscales of the IEI were included in this study. Items were scored on a 1

to 7 scale ranging from *strongly disagree* to *strongly agree*. Reliability coefficients were acceptable for the Discounting ($\alpha = .72$) and Devaluing subscales ($\alpha = .70$), but low for the Disengagement subscale ($\alpha = .53$). The Disengagement subscale was not included in any of the analyses due to low reliability.

Self-improvement effort. Self-improvement effort was measured as (1) the number of practice questions participants completed ahead of the second-portion of the test of academic competence, (2) the time participants spent practicing, and (3) the product of the number of questions and the time spent practicing (i.e., practice index). A higher number of practiced questions, longer practice times, and higher practice indexes indicate stronger efforts to self-improve. Each practice trial consisted of difficult RAT questions (i.e., questions to which 30-41% of participants can correctly answer within 30 seconds) with no time limit.

Attribution of performance. Participants' beliefs about their recent performance on the verbal test were measured using a 7-item questionnaire developed for this study. Using a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), participants were asked to indicate the extent to which they believe their scores were influenced by their "verbal ability," "overall intelligence," practice extent, "luck," "difficulty of the test," physical state (hunger/tiredness), and "environment." Total performance attribution scores were computed so that higher scores indicate more internal attributions of performance, $\alpha = .53$. Reliability was $\alpha = .76$ for the internal attribution items (i.e., "overall intelligence" and "verbal ability; 2 items), and $\alpha = .50$ for the external attribution items (i.e., "luck," "difficulty of the test," and physical state; 5

items). Due to the low reliability of the external and overall attribution scores, all analyses were performed on internal attributions only.

Manipulation checks. Manipulation checks consisted of three questions assessing participants' understanding of the feedback they received on the verbal test. To this end, participants were asked to report their scores on the first portion of the verbal test, the University's average score, and whether participants' scores were above, below, or at the University's average.

Demographics questionnaire. The demographics questionnaire included questions regarding participants' age, gender, and ethnicity.

Debriefing script. Participants were debriefed by the experimenter at the end of the study. A script instructed the experimenter to ask participants "What did you think this study was about?" If the participant's response is close to the true purpose of the study, the script instructed the experimenter to ask, "Did you think about this while you were completing the surveys?" It also instructed the experimenter to ask, "Do you think you were deceived in this experiment?" and, if participants respond that yes, what about. The purpose of these questions was to check whether participants correctly guessed the purpose of the study while completing the surveys. No participants guessed that their scores were false or that the second assessment did not exist. Finally, the script instructed the experimenter to explain that the true purpose of the study was to examine how people respond to academic failures, that the RAT was not predictive of intellectual ability, and that participants' scores were not real.

Procedure

Before signing up for this study, participants completed the SL subscale (Tafarodi & Swann, 2001) and Lawrence and Crocker's (2009) Academic Contingencies of Self-Worth scale as part of a prescreen survey students are encouraged to complete when signing up for research participation at the beginning of the semester. Participants' responses to the prescreen questionnaire were matched to their responses to the questionnaires completed in the research lab.

Upon arriving at the lab, participants were told that the purpose of this study was to explore the link between personality and verbal ability. Participants were guided to individual rooms and seated by the computer with which they would complete all tasks using Qualtrics online software. Participants were then asked to read and sign the consent form (Appendix A) if they choose to participate. The experimenter entered the participant's identification number on the first page of the survey, instructed the participant to follow the instructions on the screen, and exited the room.

The introduction to the survey (Appendix B) informed participants that the study was divided into four portions, with the first and third phases described as measures of personality, and the second and fourth as a test of verbal ability. Participants were informed that the purpose of dividing the study into four parts is to prevent boredom.

In the first phase of the study, participants completed the Name Letter Task. The software then randomly assigned participants to the Threat or No Threat condition. Participants in the Threat condition ($n = 88$) were asked to complete the 12 very difficult RAT items, whereas those in the No Threat condition ($n = 90$) were asked to complete 12 moderately difficult RAT items. The first two items of the Threat and No-Threat

conditions were practice trials to help participants better understand the task at hand.

Trial items were the same in both conditions.

The RAT was framed as “a commonly used measure of verbal ability” that can “accurately predict grade point average (GPA) and academic success.” All participants were then presented with two examples along with their respective answers and a brief explanation (Appendix C). Trials were individually presented on a computer screen for 20 seconds or until participants provided an answer.

All participants were told that Towson University’s average was 5.92. Participants in the Threat condition were also told that they “correctly answered 2 out of 12 items,” whereas those in the No Threat condition were told that they “correctly answered 6 out of 12 items.” The No-Threat condition was designed to be procedurally similar to the Threat condition, but not indicative of poor or superior ability. To ensure that participants attempted to answer as many items as possible, task instructions encouraged participants to generate answers to all items even if they were uncertain if their answers were correct.

Participants were then asked to complete the measure of state self-esteem (Leary et al., 1995), followed by the Academic, Virtue, Appearance, and Approval CSW subscales (Crocker et al., 2003), followed by items from the Intellectual Engagement Inventory (IEI; Major & Schmader, 1998). Next, participants were asked to complete the performance attributions items (Appendix D). Items in all scales were randomly ordered.

Participants were informed that the next section of the study consisted of the second part of the measure of verbal ability. (Appendix E). Task instructions informed participants that they could practice before the second portion of the test. Participants were also informed that the practice session contained 15 items, and that they could

complete as many or as few as they wanted. Based on the procedure followed by Niiya, Brook and Crocker (2010), at the bottom of the screen, participants were able to choose between “*YES, I want to practice*” and “*NO, I am ready for the test.*”

If participants choose to practice, they were asked to generate a word that was related with a set of three other words. After entering a response or clicking to continue without entering a response, participants were provided with the correct answer and a brief explanation. Participants were told that the practice questions would get increasingly difficult as they proceed to make them feel like they needed to practice even if they had not failed the previous test.

The practice session lasted until participants had completed all 15 trials, or until 10 minutes had elapsed. After each practice question, participants were asked “Would you like to do more practice trials?” and given the options to complete another trial by clicking “*YES, I want more practice,*” or to move onto the second portion of the study by clicking “*NO, I am ready for the test.*”

Participants were then asked to answer the manipulation check (Appendix F) and demographics questionnaires (Appendix G), and to call the experimenter when they were finished. The purpose of presenting the demographics questionnaire at the end of the study was to prevent the possibility that salience of some individual characteristics (e.g., gender and race) may influence participants’ task performance or survey responses (Major & Schmader, 1998; Steele & Aronson, 1995). Finally, following a debriefing script (Appendix H), the experimenter thanked the participants and probed them for suspicion.

Chapter Three:

Results

This study proposed to answer two main questions: First, whether the combination of explicit self-esteem (ESE) and implicit self-esteem (ISE) moderates the effect of an academic threat on self-esteem distancing processes (i.e., reducing Academic CSW, Discounting, and Devaluing) and subsequent preparatory effort (i.e., number of practiced questions, length of practice, and practice index); and second, whether self-esteem distancing processes explain the effect of Condition, ESE and ISE on preparatory effort. That is, whether distancing processes mediate the effect of the predictor variables on preparatory effort.

Manipulation Check

To test the effectiveness of the manipulation, an independent samples *t*-test was performed on participants' state self-esteem scores (i.e., Self-Feelings Scale; Leary et al., 1995). Participants in the Threat condition ($n = 88$) reported significantly lower (i.e., less positive) feelings of self-worth ($M = 3.25$, $SD = 1.13$) than those in the No Threat condition ($n = 90$; $M = 4.50$, $SD = .90$), $t(177) = 8.17$, $p < .001$, $d = 1.23$ [95% CI: 1.08, 1.37]. This effect was not moderated by ESE, ISE, or the interaction between the two. That is, neither implicit nor explicit self-esteem buffered against the effect of the Threat on state self-esteem.

Analysis Strategy

Dummy values were created to code the dichotomous variable (i.e., Condition), with Threat coded as 1 and No Threat coded as 0. ESE and ISE scores were mean centered. Two-way interaction terms were created by multiplying mean-centered ESE

scores by Condition (ESE X Condition), mean-centered ISE scores by Condition (ISE X Condition), and mean-centered ESE scores by mean-centered ISE scores (ESE X ISE).

The three-way interaction term was created by multiplying mean-centered values of ESE, ISE and Condition (Condition X ESE X Condition). Using SPSS software, the trait measure of academic contingencies of self-worth was entered in Block 0 (i.e., controlled covariate), the three main effects in Block 1, the two-way interactions in Block 2, and the three-way interaction in Block 3.

Preliminary analyses showed that all tolerance values were close to 1, indicating that there was no multicollinearity among the independent variables. The distributions of practiced questions, practiced time, and practice index were severely positively skewed and contained several outliers, therefore, all distributions were log transformed. The log-transformed distribution of index met all assumptions for multiple regression. The distributions of time and questions did not meet the assumptions despite log, square root, and inverse transformations; however, inspection of the residual scatterplots (i.e., plot of the errors in predicted scores by the predicted regression scores) and boxplots indicated no violations of residuals' homoscedasticity, linearity or normality, and no presence of outliers. Therefore, multiple regressions were performed with the log-transformed versions of questions, time and index.

Hypothesis Testing

Moderations. A series of multiple regression analyses were performed to test whether the interaction between ESE and ISE moderated the effect of Condition (Threat vs. No-Threat) on participants' Academic CSW, Devaluing and Discounting scores, as well as the number of completed practice trials, length of practice, and practice index.

The practice index was computed by log-transforming the product of the number of practice questions and the length of practice. Correlations and descriptive statistics for all predictor and outcome variables are displayed in Table 3.

Academic CSW. The overall model was significant, $F(8,165) = 6.17, p < .001$ and the predictors explained 23.03% of the variance in Academic CSW scores. However, the only significant predictor of state Academic CSW was trait level of academic contingencies of self-worth, $b = 0.08 [0.05, 0.11], t(165) = 6.74, p < .001$. That is, participants who generally perceived that academic outcomes strongly influenced their self-esteem continued to believe so regardless of whether they failed the first portion of the academic test or scored at the mean.

Discounting. The overall model was not significant, $F(8,165) = 1.76, p = .088$, and explained 7.87% of the variance in Discounting scores. The only significant predictor of Discounting was trait academic contingency of self-worth, $b = 0.04 [0.01, 0.07], t(165) = 2.28, p = .024$, such that participants who, in general, believed that their worth was highly dependent on academic outcomes were more likely to perceive that intelligence tests were not diagnostic of academic ability.

Devaluing. The overall model was significant, $F(8,165) = 7.02, p < .001$, and explained 25.40% of the variance in Devaluing scores. There were main effects of explicit self-esteem (ESE), $b = -0.21 [-0.34, -0.08], t(165) = -3.25, p = .001$, and trait academic contingency of self-worth, $b = -0.06 [-0.08, -0.04], t(165) = -6.56, p < .001$. That is, overall, participants reported that academic competence was important for their self-esteem and identity if they had higher trait self-esteem or, in general, believed that their worth was highly dependent on academic outcomes.

Practice questions. The overall model was not significant, $F(8,165) = 1.78, p = .085$, and explained 7.93% of the variance in number of completed practice questions. Because it is possible that the extent to which participants practiced was related to the extent to the number of RAT questions they attempted to complete, I performed the same analysis with the number of questions participants attempted on the first RAT as a covariate. Doing so, however, did not change the pattern of results.

Practice time. The overall model was not significant, $F(8,165) = 0.85, p = .562$ ($R^2 = .04$). There were no main effects or interactions between Condition, ESE, and ISE on practice time. Controlling for the number of questions participants attempted in the first test of verbal ability did not change the results.

Practice index. The overall model was not significant, $F(8,165) = 1.12, p = .353$ ($R^2 = .05$). There were no main effects or interactions between any of the predictors and the product of practice time by number of completed questions. As was the case with questions and time, controlling for the number of questions participants attempted in the first test of verbal ability did not change these results.

Moderated mediations. Although there were no interaction effects of Condition X ESE X ISE on practice extent, modern approaches to mediation suggest that significant indirect effects may be present even in the absence of a significant total effect of the predictors on the outcome variables (Hayes, 2009). Therefore, a series of moderated mediation analyses using Hayes' (2013) PROCESS macro for SPSS (Model 12) were performed to examine whether the effect of Condition X ESE X ISE was mediated by self-esteem distancing strategies.

The interaction effect of Condition X ESE X ISE on practice time was not mediated by Academic CSW, Indirect $b = -0.03$ [95% BCa CI: -0.14, 0.03], $SE = 0.04$; Discounting, Indirect $b = -0.00$ [95% BCa CI: -0.11, 0.03], $SE = 0.03$; or Devaluing, Indirect $b = 0.00$ [95% BCa CI: -0.03, 0.05], $SE = 0.02$.

The interaction effect of Condition X ESE X ISE on number of completed practice questions was also not mediated by Academic CSW, Indirect $b = -0.02$, [95% BCa CI: -0.07, 0.02], $SE = 0.02$; Discounting, Indirect $b = -0.00$ [95% BCa CI: -0.05, 0.01], $SE = 0.01$; or Devaluing, Indirect $b = 0.00$, [95% BCa CI: -0.02, 0.03], $SE = 0.01$.

Finally, the effect of Condition X ESE X ISE on practice index was not mediated by Academic CSW, Indirect $b = -0.05$, [95% BCa CI: -0.21, 0.04], $SE = 0.06$; Discounting, Indirect $b = -0.01$ [95% BCa CI: -0.14, 0.04], $SE = 0.04$; or Devaluing, Indirect $b = 0.00$, [95% BCa CI: -0.05, 0.08], $SE = 0.03$.

Additional Analyses

Choice to practice and practice extent. The number of completed practice questions ranged from 0 to 15, and the amount of time participants spent attempting to solve the questions ranged from 0 to 551.25 seconds (approximately 9.2 minutes; see Table 2). Overall, 20 participants did not practice at all before the second assessment, whereas 158 participants did; 80 of those who practiced were in the Threat condition, and 78 in the No Threat condition. Among those in the Threat condition, 80 participants practiced at least one item, and 8 did not practice at all. Among those in the No Threat condition, 78 participants practiced at least one item, and 12 did not. A logistic regression indicated that there were no main effects or interactions between Condition, ISE and ESE

on participants' choice to practice prior to the second assessment of intelligence, $\chi^2(8) = 4.26, p = .833$ (Nagelkerke $R^2 = .05$).

Participants in the Threat condition answered, on average, 6.49 items ($SD = 2.99$) and scored, on average, 0.84 questions ($SD = 0.92$). Participants in the No Threat conditions answered, on average, 9.56 items ($SD = 2.32$) and scored, on average, 8.03 ($SD = 2.04$; Table 1). In both conditions, attempts ranged from 0 to 12 items. Although the number of correct responses differed from the feedback participants received, the number of attempted items exceeded the feedback in both conditions. This suggests that even if participants real scores differed from their condition's feedback, the feedback was likely believable.

Based on past findings that threats and explicit self-esteem can influence subsequent effort (e.g., Baumeister & Tice, 1985), I examined whether Condition and ESE predicted practice effort while controlling for trait academic contingencies of self-worth. The model was significant $F(4,173) = 2.71, p = .032$, and explained 5.90% of the variance in practice attempts. There was a significant Condition X ESE interaction on number of completed practice questions, $b = -0.10$ [95% CI: -0.19, -0.00], $t(165) = -2.06, p = .041$. Pick-a-point tests indicated that individuals with lower ESE (1 SD below the mean) in the Threat condition practiced more questions than those with lower ESE in the No Threat condition, $b = 0.16$ [0.03, 0.30], $t(165) = 2.46, p = .015$. The difference in number of questions completed was not significant among individuals with average, $b = 0.06$ [-0.04, 0.15], $t(165) = 1.21, p = .230$, or higher ESE (1 SD above the mean), $b = -0.05$ [-.18, 0.08], $t(165) = -0.78, p = .435$ (Figure 1). No other main effects or interactions emerged for practice questions. Controlling for the number of questions participants

attempted in the first test of verbal ability (i.e., experimental manipulation) did not yield different results.

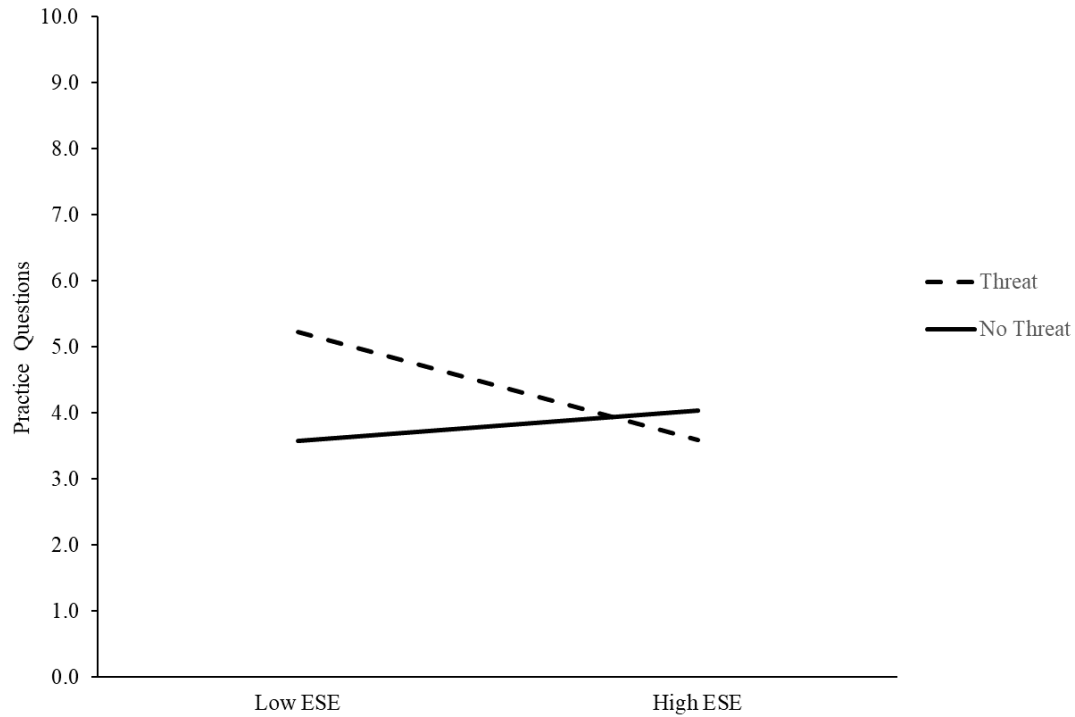


Figure 1. Effect of Condition and Explicit Trait Self-Esteem on Practice Questions.

Academic CSW was the only strategy that predicted practice extent. In fact, when distancing strategies, ESE, ISE, Condition and their interactions were included in the model, Academic CSW was still the best predictor of practice index, practice time, and practice questions after controlling for trait academic contingency of self-worth.

Specifically, participants with higher Academic CSW practiced more questions, $b = 0.08$ [0.01, 0.15], $t(162) = 2.15$, $p = .033$, marginally spent more time practicing, $b = 0.15$ [-0.01, 0.32], $t(162) = 1.87$, $p = .063$, and consequently had higher practice indexes than participants with lower Academic CSW, $b = 0.24$ [0.00, 0.47], $t(162) = 2.00$, $p = .048$.

A logistic regression further indicated that participants with higher Academic CSW were marginally more likely than those with lower Academic CSW to practice at

least one question (Nagelkerke $R^2 = .10$), $b = 0.72$, Wald $\chi^2(1) = 3.68$, $p = .055$, $OR = 2.07$ [0.98, 4.32]. Specifically, the odds that a participant would choose to practice at least one question (versus no practice) increased 2.07 times with each one-unit increase in Academic CSW as measured by the Contingencies of Self-Worth Scale (Crocker et al., 2003). There were no other effects of distancing strategies on practice extent or choice.

Performance attributions. Condition was the only predictor of participants' perceptions that their performance was influenced by their intelligence and verbal ability (i.e., intelligence attributions), $F(4,169) = 3.12$, $p = .016$ ($R^2 = .07$), $b = -0.73$ [-1.18, -0.29], $t(169) = -3.24$, $p = .001$. Specifically, compared to participants in the No Threat condition ($M = 4.49$, $SD = 1.24$), those in the Threat condition ($M = 3.75$, $SD = 1.61$) less strongly perceived that their performance was a reflection of their intelligence and ability. No other main effects or interactions emerged, and performance attributions did not mediate the effect of Condition on practice extent.

Feelings of self-worth (state self-esteem). As previously mentioned, Condition was a significant predictor of state self-esteem, or feelings of self-worth (FSW), so I also examined whether FSW mediated the effect of Condition, ESE and ISE on participants' practice extent. As in previous analyses, Condition, ESE and ISE were entered as predictors, trait academic contingencies of self-worth as a covariate, and feelings of self-worth as the mediator.

The overall model was significant, $F(8,163) = 14.39$, $p < .001$ ($R^2 = .39$). Condition was the best predictor of participants' feelings of self-worth, $b = -1.21$ [-1.48, -0.93], $t(163) = -2.34$, $p < .001$, followed by ISE, $b = 0.25$ [0.11, 0.39], $t(163) = 3.53$, $p = .001$, and ESE, $b = 0.20$ [0.05, 0.35], $t(163) = 2.67$, $p = .008$. That is, although

participants' state self-esteem was related to initial levels of trait implicit and explicit self-esteem, state self-esteem was significantly worse if participants were in the Threat rather than No Threat condition. No other main effects or interactions emerged.

Moderated mediation analyses showed that feelings of self-worth did not mediate the effect of the predictors on Academic CSW, Indirect $b = -0.04$ [95% BCa CI: -0.30, 0.05], Discounting, Indirect $b = 0.03$ [95% BCa CI: -0.05, 0.35], practice index, Indirect $b = -0.00$ [95% BCa CI: -0.14, 0.13], practice questions, Indirect $b = -0.00$ [-0.04, 0.04], or practice time, Indirect $b = -0.00$ [-0.09, 0.08].

However, FSW did predict practice index, $b = -0.21$ [-0.37, -0.06], $t(165) = -2.69$, $p = .001$, practice questions, $b = -0.07$ [-0.12, -0.02], $t(165) = -2.72$, $p = .001$, practice time, $b = -0.14$ [-0.25, -0.03], $t(165) = -2.59$, $p = .010$, and Academic CSW, $b = -0.15$ [-0.27, -0.03], $t(165) = -2.55$, $p = .012$. Therefore, I performed simple mediation analyses with Condition as the predictor, FSW as the mediator, practice extent (i.e., questions, time, and index), and Academic CSW as the outcome variables. Because FSW was not a significant predictor of Discounting or Devaluing, I did not conduct the same analyses using these self-esteem distancing strategies as the outcome variables.

FSW mediated the effect of condition on the time participants spent practicing, Indirect $b = 0.18$ [95% BCa CI: 0.07, 0.31] (Figure 2). Specifically, compared to those in the Control condition, participants in the Threat condition experienced more negative feelings of self-worth, which led them to spend more time practicing ahead of the second assessment of intelligence.

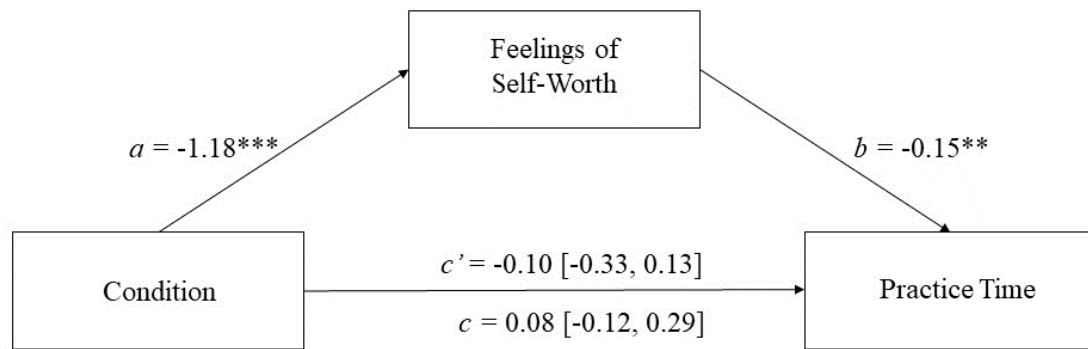


Figure 2. Mediation Model: Effect of Condition on Practice Time.

* $p < .050$, ** $p < .010$, *** $p < .001$

FSW also mediated the effect of Condition on the number of questions participants practiced, Indirect $b = 0.09 [0.04, 0.15]$, $SE = 0.03$, such that participants in the Threat condition experienced less positive feelings of self-worth than those in the Control condition, which in turn led them to practice more questions before the second assessment of verbal ability (Figure 3).

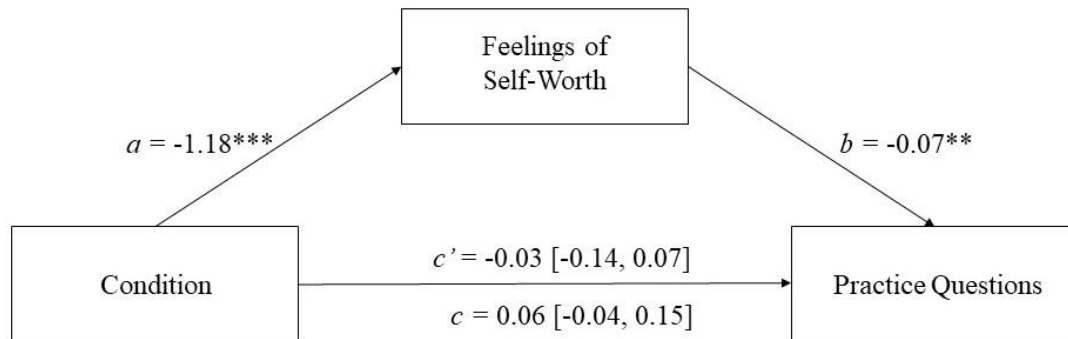


Figure 3. Mediation Model: Effect of Condition on Practice Questions.

* $p < .050$, ** $p < .010$, *** $p < .001$

As described above, ESE moderated the effect of Condition on number of completed practice questions; thus, I entered ESE as a moderator of the effects of Condition on FSW, and Condition on practice questions, ultimately testing for a

moderated mediation (Model 8; Hayes, 2013). As above, the Condition X ESE interaction predicted the number of completed practice questions, $b = -0.13 [-0.25, -0.01]$, $t(172) = -2.25$, $p = .033$; however, the Condition X ESE interaction did not predict FSW, $b = 0.17 [-0.20, 0.55]$, $t(173) = 0.91$, $p = 0.364$. Furthermore, the index of moderated mediation included zero, Indirect $b = -0.01$ [95% BCa: $-0.05, 0.01$], $SE = 0.01$. That is, although the interaction between Condition and explicit self-esteem predicted number of completed practice questions, this effect was not significantly mediated by state self-esteem (i.e., FSW).

Finally, FSW mediated the effect of Condition on practice index, Indirect $b = 0.26$ [95% BCa CI: $0.11, 0.46$], $SE = 0.09$ (Figure 4). That is, compared to those in the No Threat condition, participants in the Threat condition reported less positive feelings of self-worth, which in turn predicted a greater number of completed questions and longer practice times.

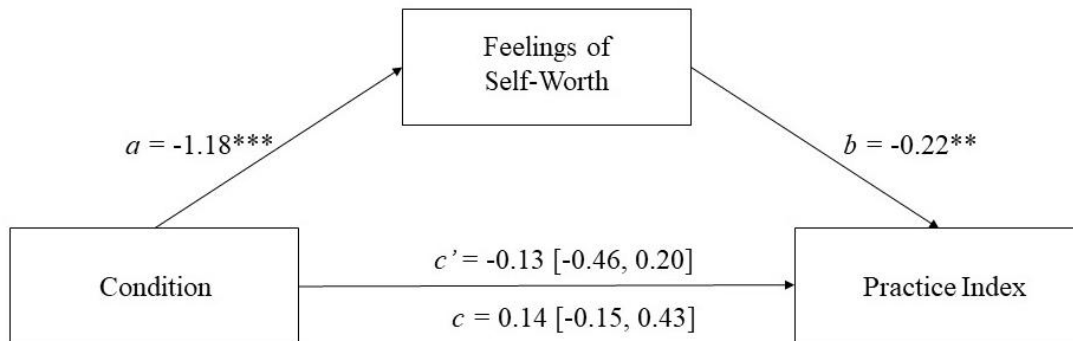


Figure 4. Mediation Model: Effect of Condition on Practice Index.

* $p < .050$, ** $p < .010$, *** $p < .001$

Finally, FSW mediated the effect of Condition on Academic CSW, Indirect $b = 0.20$ [95% BCa CI: $0.07, 0.37$], $SE = 0.07$. That is, compared to those in the Control condition, participants in the Threat condition experienced less positive feelings of self-

worth, which in turn predicted stronger perceptions that participants' self-esteem was dependent on academic outcomes (Figure 5).

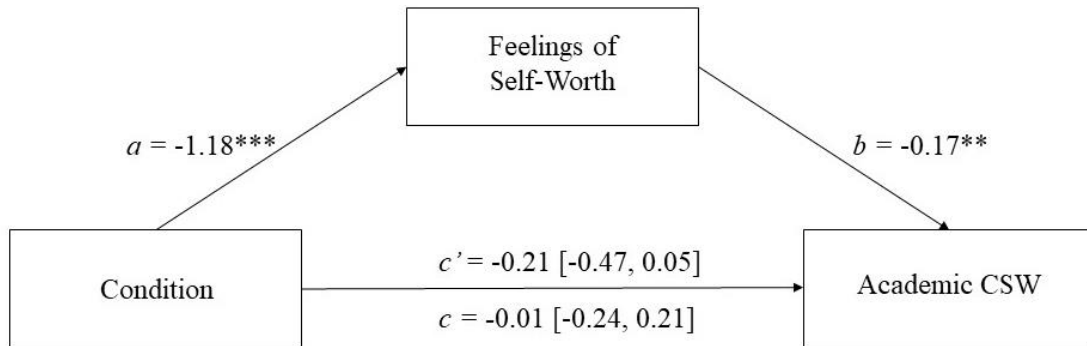


Figure 5. Mediation Model: Effect of Condition on Academic CSW.

* $p < .050$, ** $p < .010$, *** $p < .001$

Because the effect of Condition on practice extent was mediated by both FSW and Academic CSW, I also examined whether FSW and Academic CSW sequentially mediated the effect of Condition on practice extent. Using PROCESS Model 6 (Hayes, 2013), I entered the two variables in the same order in which they were completed by participants, with FSW as the first mediator and Academic CSW as the second. As with all other analyses, trait-level of academic contingencies of self-worth was entered as a covariate. There was a significant indirect effect of Condition on number of completed practice questions via FSW and Academic CSW (Figure 6), Indirect $b = 0.01$ [95% BCa CI: 0.00, 0.03], $SE = .01$. However, this effect was a small contribution to the total indirect effect (total Indirect $b = 0.08$ [95% BCa CI: 0.02, 0.14], $SE = .03$) compared to that of FSW alone, Indirect $b = 0.08$ [95% BCa: 0.03, 0.14], $SE = .03$. There were no indirect effects of Condition on Practice Time, Indirect $b = 0.02$ [95% BCa: -0.00, 0.07], or Index, Indirect $b = 0.03$ [95% BCa: -0.00, 0.10], via FSW and Academic CSW.

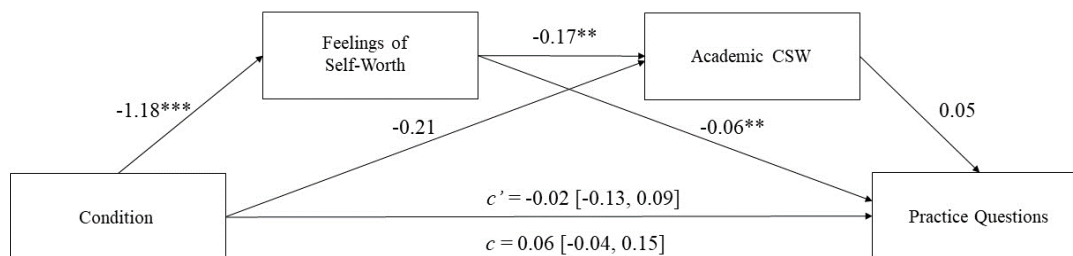


Figure 6. Indirect effect of condition on number of completed practice questions.

* $p < .050$, ** $p < .010$, *** $p < .001$

Note that, with the exception of the effect of Condition on practice questions via FSW and Academic CSW, all mediation models contained direct and total effects of opposite signs. That is, when mediators were not included in the models (i.e., total effect), being assigned to the Threat condition predicted greater practice extent (longer practice times, greater number of completed questions, and higher practice index) than being assigned to the No Threat condition; however, when the mediators were included in the models (i.e., direct effect), being assigned to the Threat condition predicted lower practice extent (shorter practice times, fewer completed questions, and lower practice index) than being assigned to the No Threat condition. This difference in direction of coefficients suggests the presence of one or more suppressor variables, or variables that strengthen the relationship between a predictor and an outcome variable (MacKinnon, Krull, & Lockwood, 2000). In the present study, it appears that FSW is a suppressor of the effect of Condition on practice extent, as adding FSW to the model changes the direction of the effect of Condition on practice effort. It is unlikely, however, that this effect invalidates of the indirect relationship between Condition and practice extent, as both direct and total effects were not significantly different from zero. Specifically, although the direction of the unstandardized beta coefficients differed between the direct

and total effects, neither coefficient differed from zero as both bootstrapped confidence intervals included zero.

Trait academic contingencies of self-worth. As previously discussed, trait academic contingency of self-worth was a significant predictor of all three self-esteem distancing strategies (i.e., Discounting, Devaluing, and Academic CSW) as well as performance attribution. Therefore, I conducted multiple regressions with trait academic contingency of self-worth, ESE, ISE, and Condition as moderators, and Discounting, Devaluing, Academic CSW, and performance attributions as the outcome variables. No main effects or interactions emerged when predicting Discounting, Devaluing, Academic CSW, or practice extent (i.e., practice questions, time, and index; all $p > .050$).

Chapter Four:

Discussion

The purpose of the present study was to examine whether feedback type (i.e., below or at the average), and different combinations of implicit (ISE) and explicit self-esteem (ESE) predicted the extent to which college students attempted to improve their performance on a measure verbal ability. In light of recent studies (Andrade & Buckingham, 2017; Buckingham et al., in press), I hypothesized that individuals with defensive high self-esteem (HSE) would practice less after receiving failure rather than average feedback, whereas those with a secure type of HSE would not differ in practice extent as a function of feedback. On the other hand, I hypothesized that individuals with congruent low self-esteem (LSE) would practice more after receiving negative rather than average feedback. I did not formulate a priori hypotheses about the effort of individuals with incongruent low self-esteem.

Contrary to my hypotheses, regardless of level of implicit self-esteem, individuals with low explicit self-esteem practiced more questions after Threat than No Threat, whereas those with explicit high self-esteem did not differ in practice extent regardless of condition. The finding that participants with low explicit self-esteem practiced more after receiving negative, rather than average, feedback is in line with that of Baumeister and Tice (1985), who showed that, after failure on a test of technique, participants with low explicit self-esteem felt more motivated to work on a future task than those who did not fail the test. As suggested by Baumeister and Tice, persevering allows LSE participants to remedy their deficits and reach acceptable levels of competence. That is, for individuals with low self-esteem, practicing is a self-protective strategy that decreases the

chances of future failure and loss of self-esteem. Another possibility is that the self-esteem of LSE participants hit “rock bottom” after the Threat, such that they had nothing to lose by investing effort in a task that could still lead to failure. If self-esteem can no longer be lost, potentially negative feedback may no longer be threatening, allowing low self-esteem individuals in the Threat condition to invest themselves in the task without fear of the outcome.

The finding that individuals with high self-esteem did not differ in practice extent as a function of feedback was unexpected. One may suggest these results indicate that high explicit self-esteem buffers against the negative effect of threats and prevents participants from withdrawing effort (i.e., self-handicapping). I do not believe this was the case. Specifically, if the number of questions completed by those who did not receive failure feedback is a “practice baseline,” then self-improvement would be any practice that significantly exceeded this amount. However, after failure, participants with high ESE only practiced at “baseline” levels, suggesting that having high ESE does not necessary confer adaptive self-regulatory functions in the face of threatening feedback.

It appears that higher self-esteem did not evoke adaptive responses either, such that participants who received average feedback reported more positive feelings of self-worth and in turn devoted less effort to self-improve. In other words, even though participants in the No Threat condition were only slightly better than the average student, the “no failure” feedback may have helped maintain their self-esteem at acceptable levels, making it unnecessary to engage in behaviors that would guarantee or promote more positive self-views (i.e., practice). It would be interesting to explore whether individual differences in traits such as self-compassion are superior to implicit and

explicit self-esteem in predicting self-improvement, rather than complacency, after an academic failure (Neff, Hsieh, & Dejitterat, 2005).

The present study also aimed to determine whether strategies aimed at distancing the self from the threat facilitated or undermined participants' effort to self-improve as a function of Condition and different combinations of ISE and ESE. These strategies were reducing Academic CSW and increasing Discounting and Devaluing. In the present study, none of the proposed strategies explained the extent to which participants practiced in preparation for the second assessment of verbal ability. However, regardless of Condition, ESE, and ISE, the higher a participant's belief that his or her self-esteem was currently dependent on academic outcomes, the more the participant practiced ahead of the second assessment of verbal ability. These findings are in line with past research by Crocker et al. (2003), which revealed that trait level of contingencies of self-worth predicted the amount of time college students spent on tasks related to their contingencies (e.g., students higher in academic CSW spent more time studying).

The present study further adds to Crocker et al.'s (2003) findings by revealing that, even after accounting for trait-level Academic CSW, state-level Academic CSW had consequences for related behaviors. That is, despite participants' general perceptions of the extent to which their self-esteem hinged on academic outcomes, in-the-moment perceptions predicted how long participants spent practicing ahead of the second test of ability. This finding also contributes to the overall literature on self-esteem maintenance by showing that as the extent to which self-esteem is vulnerable to academic outcomes increases, the more time people invest in increasing the likelihood of a positive outcome.

Interestingly, although higher Academic CSW was positively related to Devaluing and Disengagement, it was negatively related to Discounting. Although this pattern may seem counterintuitive, closer analysis of the measures suggests that it may not be so. Specifically, while devaluing and disengagement reflect the extent to which participants' self-concepts are defined by academic competence and intelligence feedback, respectively, discounting reflects the extent to which participants are skeptical of the diagnostic value of intelligence tests. In the present study, participants who strongly believed that their self-esteem was influenced by academic outcomes also more strongly discounted the validity of intelligence tests. On one hand, such strategy may be maladaptive, as those whose self-esteem is most vulnerable to negative feedback also tend to more easily discount the validity of feedback, potentially missing opportunities to gauge their ability and failing to invest effort where necessary to maintain, protect or increase self-esteem. On the other hand, this strategy may reflect a tendency to believe that intelligence and abilities are not static and can be improved, which is likely adaptive for those who perceive that their self-worth is boosted by positive feedback and harmed by negative feedback. Including a measure of theories of intelligence (i.e., incremental vs. entity) after the manipulation may help answer which was the case.

Finally, it would be interesting to investigate how long do threat-specific changes in contingencies of self-worth last and what are the long-term effects of frequently altering one's contingencies. That is, much like chronic intellectual disengagement can reduce responsiveness to negative feedback (Major, Spencer, Schmader, Wolfe, & Crocker, 1998), frequent drops or increases in one's contingencies may influence the overall extent to which certain events impact one's self-worth. To the extent that trait-

level of academic contingency of self-worth predicts the amount of time students dedicate to academic-related activities (Crocker et al., 2003), frequent fluctuations that lead to stable contingencies may have important consequences for academic achievement. On the other hand, it is possible that changes in CSWs are short-lasting thought processes that do not ultimately derail the behavioral pursuit of academic goals. Longitudinal studies may be able to address these questions.

Limitations

Although many of the present study's findings align and extend past research, this study was not without limitations. First, the present study did not replicate past findings that Condition, implicit and explicit self-esteem interact to influence contingent self-worth (Buckingham et al., in press). One possible explanation is that Buckingham et al.'s study used the Implicit Association Test (IAT) to assess implicit self-esteem, whereas the present study used the Name Letter Task (NLT). While both measures propose to measure implicit self-esteem, it is possible that they tap different forms of implicit self-evaluations (Zeigler-Hill, 2006) and thus differ in the extent to which they predict fluctuations in contingencies of self-worth after threats. Future studies could investigate whether these two measures differ in the types of contingencies that they predict, the extent to which they predict them, and the way they interact with explicit self-esteem to influence self-improvement effort after threats.

Another possible explanation is that participants who failed the verbal test did not need to re-evaluate their self-esteem contingencies because they did not attribute their performance to intelligence (i.e., lower intelligence attributions in among those in the Threat condition). However, I believe this was not the case. Further analyses showed that

controlling for intelligence attributions did not influence the (lack of) effect of test feedback or type of self-esteem (i.e., implicit and/or explicit) on distancing strategies¹. A more likely explanation is that the present study's No Threat condition was still self-threatening. This possibility is supported by the fact that this study's findings were not in line with those of Andrade and Buckingham (2017), who found that Condition, implicit and explicit self-esteem influenced motivation to improve academic competence. Therefore, it is possible that the mere presence of a test of ability was sufficient to elicit self-threat even when the performance feedback was at the University's average. Indeed, state self-esteem of participants in the present study was lower in both the Threat and No Threat conditions compared to the state self-esteem of participants in Andrade and Buckingham's (2017) study². That is, participants in Andrade and Buckingham's study felt more positive about themselves than did participants in the present study, suggesting that any manipulation that involves testing is inherently threatening or anxiety provoking, such that both average and negative feedback produced similar effects. Future studies examining the effect of academic threats should use control conditions that are inherently nonthreatening, such as the one used by Andrade and Buckingham (2017).

Other alterations to the study's method may also elicit a greater variation in practice extent. Specifically, it is possible that participants in the present study did not vary in the extent to which they practiced because they did not expect that practice would increase their scores. Alternatively, participants may have perceived that they had sufficient knowledge of the task after completing 14 trials in the first portion of the verbal test (i.e., two practice trials and 12 RAT items). This does not mean participants were not motivated or did not intend to self-improve, but that they did not perceive that practicing

the RAT would have increased their chances of success. Informing participants that the second assessment would involve a different task (e.g., a visuospatial task) or that some of the practice questions may be included in the second assessment could have motivated them to perform more trials. Lastly, it is possible that presenting the practice trials after completion all self-report measures dampened the effect of the threat and participants' motivation to work on the practice questions. Presenting the practice questions immediately after the feedback may have increased the effect of the manipulation by maintaining any threat-related effects more readily accessible and unadulterated.

A final limitation of this study is its cross-sectional design, which does not allow causal inferences about the relationship between state feedback type, Academic CSW and practice extent via state self-esteem. Specifically, it is impossible to determine whether variations in state self-esteem caused variations in practice extent, and thus mediated the effect of feedback type, even though (1) participants who received negative feedback reported lower state self-esteem than those who received average feedback, and (2) more negative state self-esteem predicted longer practice times, greater number of practice questions, and higher Academic CSW. As described by Pek and Hoyle (2016), a causal inference would require experimental manipulation of both the predictor (i.e., Condition) and the mediator (i.e., state self-esteem). In the present study, state self-esteem was a function of Condition and not experimentally manipulated. Therefore, future studies aimed at determining the role of state self-esteem in the relationship between feedback type and practice extent would also need to establish the causal relationship between state self-esteem and practice extent by manipulating participants' state self-esteem (Pek & Hoyle, 2016).

Notes

¹ To rule out the possibility that attributing performance to less internal factors (e.g., intelligence, verbal ability) explained the absent effect of Condition on self-esteem distancing strategies, I conducted multiple regression analyses with Condition, ISE and ESE and predictors, each of the distancing strategies as outcomes (Academic CSW, Discounting, and Devaluing), and both Intelligence Attributions and trait academic contingencies of self-worth as covariates. None of the analyses yielded significant interactions or main effects of the predictors on any of the outcome variables, all $p > .050$.

² State self-esteem of participants (FSW) in Andrade and Buckingham's (2017) was higher in both Threat ($M = 4.14$, $SD = 1.00$) and No Threat ($M = 5.20$, $SD = 0.90$) compared to state self-esteem of the present study's participants in the Threat ($M = 3.25$, $SD = 1.13$) and No Threat ($M = 4.50$, $SD = .90$) conditions.

Chapter Five:

Conclusion

Investing effort to improve academic competence is an adaptive strategy for college students. The purpose of the present study was to examine whether individual differences in implicit and explicit trait self-esteem influence the extent to which students practiced ahead of a second assessment of intelligence after receiving feedback that they scored at or well-below the University's average.

Regardless of implicit self-esteem and initial perceptions of the extent to which academic outcomes shape their self-esteem, participants with lower explicit self-esteem invested superior effort in improving themselves after receiving negative, rather than average, feedback on a test of verbal ability. Conversely, participants with higher explicit self-esteem who scored well-below the mean practiced only as much as those who scored at the mean. Further, participants who received average feedback practiced less than those who received negative feedback on the verbal test, possibly because their state self-esteem was not sufficiently negative to warrant remediation via self-improvement.

Feedback type and trait self-esteem did not affect the extent to which participants perceived that academic outcomes influenced their self-esteem; however, variations in these state-level perceptions were related to the number of completed practice questions even after accounting for trait-level academic contingency of self-worth.

The present study contributes to the literature on contingencies of self-worth and self-esteem, shedding light on the implications of explicit and contingent self-esteem for self-improvement in the academic domain. Future research is needed to uncover the influence of implicit self-esteem as well as the mechanisms behind effort to improve.

Table 1

Descriptive Statistics for Performance on the Remote Associates Test (RAT)

| | Questions Attempted | | Questions Correct | |
|-----------|---------------------|-----------|-------------------|-----------|
| | Threat | No Threat | Threat | No Threat |
| Minimum | 1.00 | 2.00 | 0.00 | 2.00 |
| Maximum | 12.00 | 12.00 | 4.00 | 12.00 |
| Median | 7.00 | 10.00 | 1.00 | 8.00 |
| Mode | 8.00 | 11.00 | 1.00 | 9.00 |
| <i>M</i> | 6.48 | 9.56 | 0.84 | 8.03 |
| <i>SD</i> | 2.99 | 2.32 | 0.92 | 2.04 |

Note: Questions Attempted = Number of questions to which participants provided a valid answer; Questions Correct = Number of questions to which participants provided the correct answer.

Table 2

Correlations and Descriptive Statistics for All Variables

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|-------------------------|--------|--------|--------|------|--------|--------|--------|--------|--------|-------|-------|--------|--------|------|------|-------|------|------|
| 1. Condition | -- | | | | | | | | | | | | | | | | | |
| 2. Self-Liking | -.05 | -- | | | | | | | | | | | | | | | | |
| 3. FSW | -.52** | .27** | -- | | | | | | | | | | | | | | | |
| 4. NLTz | .10 | .02 | .15 | -- | | | | | | | | | | | | | | |
| 5. ACSW | .15* | -.32 | -.25** | .04 | -- | | | | | | | | | | | | | |
| 6. AcadCSW | .07 | -.10 | -.27** | -.04 | .44** | -- | | | | | | | | | | | | |
| 7. Discounting | .13 | -.01 | -.05 | .11 | .20** | .16* | -- | | | | | | | | | | | |
| 8. Devaluing | -.11 | -.01 | .24** | -.01 | -.43** | -.60** | -.02 | -- | | | | | | | | | | |
| 9. Disengage | -.10 | .16** | .25** | .08 | -.15 | -.31** | .18* | .32** | -- | | | | | | | | | |
| 10. Time | .07 | -.10 | -.24** | .02 | .09 | .18* | -.02 | -.10 | -.15* | -- | | | | | | | | |
| 11. Questions | .10 | -.12 | -.27** | .00 | .13 | .20** | -.02 | -.13 | -.18* | .90** | -- | | | | | | | |
| 12. Index | .08 | -.11 | -.25** | .01 | .10 | .20** | -.02 | -.12 | -.16* | .99** | .96** | -- | | | | | | |
| 13. PerfAtt | -.37** | .01 | .13 | -.09 | -.23** | -.08 | -.20** | .09 | -.02 | -.06 | -.10 | -.07 | -- | | | | | |
| 14. EXTatt | .26** | .04 | -.08 | .10 | .19** | .11 | .10 | -.10 | -.05 | .08 | .13 | .10 | -.85** | -- | | | | |
| 15. INTatt | -.25** | .08 | .11 | .00 | -.10 | .04 | -.21** | -.00 | -.12 | .02 | .03 | .03 | .42** | .13 | -- | | | |
| 16. ApprovCSW | .12 | -.40** | -.30** | -.06 | .27** | .20** | .01 | -.09 | -.35** | .05 | .10 | .07 | -.18* | .13 | -.11 | -- | | |
| 17. AppearCSW | .15 | -.37** | -.24** | -.03 | .31** | .33** | .11 | -.15 | -.29** | -.06 | -.03 | -.05 | -.10 | .07 | -.06 | .47** | -- | |
| 18. VirtueCSW | -.05 | .08 | -.08 | -.13 | .23** | .34** | -.04 | -.33** | -.06 | .00 | .05 | .02 | -.08 | .08 | -.02 | .10 | .05 | -- |
| <i>M</i> | | 3.52 | 3.89 | 1.16 | 3.97 | 5.66 | 4.64 | 2.10 | 3.63 | 37.15 | 4.07 | 150.76 | 4.02 | 4.03 | 4.13 | 3.94 | 4.98 | 5.18 |
| <i>SD</i> | | .77 | 1.19 | 0.70 | 0.89 | 0.85 | 1.01 | 0.72 | 1.08 | 4.79 | 2.07 | 9.43 | 0.78 | 0.99 | 1.48 | 1.32 | 1.00 | 0.90 |
| <i>Cronbach's alpha</i> | | .91 | .95 | .49 | .81 | .76 | .70 | .72 | .53 | | | | .53 | .50 | .76 | .84 | .75 | .76 |

Note: Self-Liking = ESE; FSW = Feelings of self-worth; NLTz = ISE; ACSW = Academic CSW (trait); AcadCSW = Academic CSW (state); Time = Practice time (back-transformed for *M* and *SD*); Questions = Number of completed practice questions (back-transformed for *M* and *SD*); Index = Time X Questions (back-transformed for *M* and *SD*); PerfAtt = Performance attribution; EXTatt = External attribution; INTatt = Internal attribution; ApprovCSW = Approval CSW; AppearCSW = Appearance CSW; VirtueCSW = Virtue CSW.

* $p < .05$, ** $p < .01$

Table 3

Descriptive Statistics for Practice Questions and Time by Condition

| | Questions | | Time | |
|-----------|-----------|-----------|--------|-----------|
| | Threat | No Threat | Threat | No Threat |
| Minimum | 0.00 | 0.00 | 0.00 | 0.00 |
| Maximum | 15.00 | 15.00 | 551.25 | 348.97 |
| Median | 3.00 | 3.00 | 56.04 | 52.39 |
| <i>M</i> | 4.22 | 4.85 | 81.75 | 69.51 |
| <i>SD</i> | 4.25 | 4.13 | 89.00 | 68.81 |

Note: Time in seconds.

Appendix A

Informed Consent

Purpose of the study: The purpose of this research study is to obtain more information on personality and verbal skills. Your participation will help us understand how different types of personality relate to different styles of verbal ability.

Description of the study: If you choose to participate, you will be asked to complete all tasks related to this study on a computer. During these tasks, you will be asked to answer questions about your personality and your preferences. You will also be asked to complete a test of verbal skills. Completing all the tasks should take 45 minutes or less and you will receive 1.5 credits on Research Pool. Participants must be at least 18 years old.

Alternatives to participation: Your participation in this study is entirely voluntary. You are free to withdraw from this study at any time. Withdrawing from this study will not affect your grade or class standing. Should you wish to have your data removed from this study after completing it, please contact the researcher or the faculty supervisor and we will remove your information.

Confidentiality: All answers will be kept confidential and will not be shared with anyone except the researcher and research advisor. Your name will be temporarily matched to your responses using a numeric code. However, all information linking your name to your responses will be destroyed once data collection is complete. Although descriptions and results of this study may be published, no publications or reports will contain any identifying information.

Risks: Although there are no known risks involved in participating in this study, we will terminate the experiment immediately if you feel any anxiety or distress. If you have any questions about this study, you may ask them now or at any time during the study. Should you have any questions after you have completed the study, you may call (717) 808-1773 to speak with the researcher, Fernanda Andrade; (410) 704-3214 to speak with the faculty advisor, Dr. Justin Buckingham; or (410) 704-2236 to speak with Dr. Elizabeth Katz, Chair of the Institutional Review Board for the Protection of Human Participants at Towson University. Should you feel upset or distressed as a result of this study, please do not hesitate to contact Towson University's Health and Counseling Centers by calling (410) 704-2512, or visiting their office at Ward & West, 2nd Floor, Monday through Friday, 8am - 5pm.

Researcher: Fernanda C. Andrade
 Graduate Student
 (717) 808-1773
 fchard1@students.towson.edu

Faculty advisor: Dr. Justin Buckingham
 Professor
 (410) 704-3214
 jrbuckingham@towson.edu

I, _____ (Please print your name)
 have read the information above and understand that my participation in this study is entirely voluntary. I understand that I may withdraw at any time and that my answers will be kept confidential.

Participant's Signature/Date: _____ (Please sign)

Experimenter's Signature/Date: _____ (Please sign)

THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY THE TOWSON UNIVERSITY
 INSTITUTIONAL REVIEW BOARD FOR THE PROTECTION OF HUMAN PARTICIPANTS.

Appendix B

Introduction

Thank you for participating in this study.

This study is divided into four phases. In the first and third phases, you will be asked to answer questions about your personality. In the second and fourth phases, you will be tested on your verbal skills.

Please read all the instructions carefully and answer the questions to the best of your ability.

Appendix C

Remote Associates Test (RAT) Instructions

PLEASE CAREFULLY READ THE INSTRUCTIONS BELOW.

This task is a test of academic competence that specifically measures verbal ability. Studies with college students have shown that verbal ability is the best predictor of grade point average (GPA) and overall success in any academic major.

For each question, you will be asked to create a word that has something in common with a set of three other words.

Example 1: tooth / potato / heart

The correct answer is **sweet**.

Why? **sweet** tooth, **sweet** potato, **sweet**heart

Example 2: pea / shell / chest

The correct answer is **nut**.

Why? **peanut**, **nut**shell, chest**nut**

- Responses are not case sensitive, so you do not need to capitalize letters.
- Once you have entered your answer, click the arrow to move onto the next question.
- You will not lose points if you provide an incorrect answer, so try to answer all questions even if you are not sure if your answer is correct.

This task is timed. **You have 20 seconds to answer each question.** The first two questions are practice trials.

Appendix D

Performance Attributions Measure

Please indicate how much you believe **your performance on the verbal test was due to:**

| Strongly Disagree | Moderately Disagree | Disagree | Neither agree nor disagree | Agree | Moderately Agree | Strongly Agree |
|----------------------|------------------------|----------|----------------------------------|-------|---------------------|-------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

1. Your verbal ability
2. Your overall intelligence
3. How much you practiced
4. Luck
5. The difficulty of the test
6. How tired/hungry you are
7. The environment/room you are in

Appendix E

Practice Instructions

PLEASE CAREFULLY READ THE INSTRUCTIONS BELOW.

This is the second half of the measure of verbal ability. The questions on this part of the test of verbal ability are similar to those you completed on the first half.

If you would like, you can perform some practice questions before you start this portion of the test. There are 15 questions on this practice session. You may go over as many or as few questions as you want.

There is no time limit to complete the practice questions, and you can move onto the actual test at any time. To give you a better idea of this second portion of the test, practice questions will get more difficult as you proceed.

Would you like some practice?

- YES, I would like some practice
- NO, I am ready for the test

Appendix F

Manipulation Checks

1. What was your score on the first portion of the test (out of 12)? If you don't remember your exact score, please estimate.
2. Where was your score compared to the average for TU students?
 - Above average
 - Average
 - Below average

Appendix G

Demographics Questionnaire

The following questions are for categorization purposes only. At no time your answers will be matched to any of your personal information. Please answer each of the following questions as honestly as possible and to the best of your abilities.

1. What is your age? _____ yrs.

2. What is your sex?

___Male

___Female

___Other: _____

3. What is your ethnicity? (Please check as many as apply)

___Caucasian

___Hispanic/Latino(a)

___African American

___Native American

___Asian/Pacific Islander

___Other: _____

Appendix H

Debriefing Script

A. Please ask participants the following questions to probe for suspicion. Write down a note if you believe the participant guessed the true purpose of the study while completing the tasks.

1. What did you think this study was about?

- If participant's guess is close to the true purpose of the study: **Did you think about this while you were completing the surveys?**

2. Do you think you were deceived in this experiment?

- If so, about what?

3. Did you feel distressed or upset at any time?

- If participants respond that yes, refer them to TU's Health and Counseling Centers, located at Ward & West, 2nd Floor, Monday through Friday, 8am - 5pm; Their number is (410) 704-2512.

4. If you later feel distressed or upset as a result of this study, you can also find the Counseling Center contact information on your copy of the consent form.

B. Please explain the following information to the participant.

Thank you very much for participating in this study. **The purpose of this study is to see how people respond to academic failure and to see if self-esteem affects people's responses.** In this study, you completed a self-esteem questionnaire and measures of which areas of your life are most important to you.

You also completed a verbal test of academic ability. Since we are studying responses to academic failure, the results were manipulated so that all participants received a score of either 3 or 7 out of 12. **This was not an actual test of academic competence and your performance on this test is not a real predictor of grade point average or academic success.** We apologize for any unpleasant feelings that you may have had after completing it or receiving feedback that you failed.

Because we are studying people's responses to academic failure, it is important that we explore how much they want to practice before completing another academic test. **Your participation is complete at this point and you do not have to complete another test.** This deception was used because it was important that you carefully considered how much you wanted to practice before the second test.

If you have any questions about this study, please feel free to ask them now. Should you have questions after today or would like to know about the results, you may contact the researcher, Fernanda C. Andrade, or the faculty supervisor, Dr. Justin Buckingham (contact information is on the consent form).

Appendix I

Institutional Review Board Approval



Office of Sponsored
Programs and Research

Towson University
8000 York Road
Towson, MD 21252-0001

t. 410 704-2236
f. 410 704-4494

APPROVAL NUMBER 1709022793

MEMORANDUM

TO: Fernanda Andrade

FROM: Institutional Review Board for the Protection of Human
Participants, Elizabeth Katz, Chair

DATE: April 5th, 2018

RE: Approval of Research Involving the Use of Human Participants

Thank you for submitting an Application for Approval of Research Involving the Use of Human Participants to the Institutional Review Board for the Protection of Human Participants (IRB) at Towson University. The IRB hereby approves your proposal titled:

Who Tries to Self-Improve After an Academic Failure? Trait Self-Esteem Differences and the Mediating Role of Self-Esteem Distancing Processes

Please note that this approval is granted on the condition that you provide the IRB with the following information and/or documentation:

N/A

If you should encounter any new risks, reactions, or injuries while conducting your research, please notify the IRB. Should your research extend beyond one year in duration, or should there be substantive changes in your research protocol, you will need to submit another application for approval at that time.

We wish you every success in your research project. If you have any questions, please call me at (410) 704-2236.

cc: Justin Buckingham



Date: April 5th, 2018

Office of Sponsored
Programs and Research

Towson University
8000 York Road
Towson, MD 21252-0001

t. 410 704-2236
f. 410 704-4494

NOTICE OF APPROVAL

TO: Fernanda Andrade

DEPT: Psychology

PROJECT TITLE: *Who Tries to Self-Improve After an Academic Failure? Trait Self-Esteem Differences and the Mediating Role of Self-Esteem Distancing Processes*

SPONSORING AGENCY: N/A

APPROVAL NUMBER: 1709022793

The Institutional Review Board for the Protection of Human Participants has approved the project described above. Approval was based on the descriptive material and procedures you submitted for review. Should any changes be made in your procedures, or if you should encounter any new risks, reactions, injuries, or deaths of persons as participants, you should notify the Board.

| | |
|----------------|---|
| A consent form | <input checked="" type="checkbox"/> is required of each participant |
| | <input type="checkbox"/> is not |
| Assent | <input type="checkbox"/> is required of each participant |
| | <input checked="" type="checkbox"/> is not |

This protocol was first approved on 09/28/2018.
This research will be reviewed every year from the date of first approval.

Elizabeth Katz, Chair
Towson University Institutional Review Board, IRB



Fernanda Chardulo Dias De Andrade <fchard1@students.towson.edu>

IRB Approval 1709022793

IRB <irb@towson.edu>

Fri, Sep 29, 2017 at 10:23 AM

To: "Chardulo Dias De Andrade, Fernanda" <fchard1@students.towson.edu>

Cc: IRB <irb@towson.edu>, "Buckingham, Justin" <jbuckingham@towson.edu>

The IRB has approved your protocol **"Who Tries to Self-Improve After an Academic Failure? Trait Self-Esteem Differences and the Mediating Role of Self-Esteem Distancing Processes"** as expedited, **effective 9/29/2017 and expiring 9/28/2018**.

Your IRB protocol can now be viewed in MyOSPR. **Student investigators: protocols can be viewed by your faculty advisor.** For more information, please visit: <http://www.towson.edu/academics/research/sponsored/myospr.html>

Please Note: Formal approval letters are now provided upon request. If you would like to have one drafted, please notify the IRB staff.

If you should encounter any new risks, reactions, or injuries to subjects while conducting your research, please notify IRB@towson.edu. If your research has been approved as expedited and will extend beyond one year in duration, you will need to submit an annual renewal notice. Should there be substantive changes in your research protocol, you will need to submit another application.

Regards,

Towson IRB

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Fernanda Chardulo Dias de Andrade

Education

- 2016-Present **M.A., Experimental Psychology**, Towson University, Towson, MD
 GPA: 4.00
 Thesis title: “*Who Tries to Self-Improve After an Academic Failure? Trait Self-Esteem Differences and the Mediating Role of Self-Esteem Distancing Processes*”
 Advisors: Drs. Justin Buckingham (chair), Geoffrey Munro, Jeffrey Kukucka
- 2011-2014 **B.A., Psychology, Millersville University**, Millersville, PA
 GPA: 3.99, *Summa Cum Laude*
 Undergraduate thesis title: *Self-Concept Clarity and Information Processing Style Among College Students*

Relevant Coursework

- | | |
|--|---|
| PSYC 680 Advanced Cognitive Psychology PSYC 682 Advanced Social Psychology PSYC 681 Advanced Experimental Design I PSYC 688 Advanced Experimental Design II PSYC 689 Multivariate Methods PSYC 685 College Teaching Practicum PSYC 679 Special Topics Seminar: Memory PSYC 674 Advanced Biological Psychology | PSYC 496 Culture and Behavior PSYC 417 Tests and Measurements PSYC 415 Physiological Psychology PSYC 356 Health Psychology PSYC 317 Social Psychology PSYC 314 Cognitive Psychology PSYC 212 Statistics and Experimental Design II PSYC 211 Statistics and Experimental Design I |
|--|---|

Academic Honors

- 2018 Graduate Student Commencement Speaker, College of Liberal Arts, Towson University
- 2011-14 Honors Program, Millersville University of Pennsylvania
 Summa Cum Laude, Millersville University of Pennsylvania
 Dean’s List, Millersville University of Pennsylvania
- 2012 Psi Chi, The National Honors Society in Psychology

Publications

- Buckingham, J. T., Lam, T., **Andrade, F.**, Boring, B., Emery, D. (in press). Reducing contingent self-worth: A defensive response to self-threats. *The Journal of Social Psychology*.
<https://doi.org/10.1080/00224545.2018.1461604>

Manuscripts

- Buckingham, J. T., Yamkovenko, B., Boring, B. L., & **Andrade, F. C.** (Manuscript under review). Beyond comparison: Development and validation of a measure of relationship evaluation processes. *Journal of Social and Personal Relationships*.
- Brace, A., **Andrade, F. C.**, Finkelstein, B. (Manuscript under review). Assessing the effectiveness of nutrition interventions implemented among US college students to promote healthy behaviors: A systematic review. *Nutrition and Health*.

Conference Presentations

Andrade, F., & Buckingham, J. B. (2018, March). *Self-Improvement after an Academic Threat: The Interaction between Implicit and Explicit Self-Esteem*. Poster presented at the 2018 SPSP Annual Convention, Atlanta, GA.

Andrade, F. C., & Woo, T. O. (2014, May). *The Self-Concept Clarity and Information Processing Style among College Students*. Poster presented at the annual meeting of the Association for Psychological Science, San Francisco, CA.

Andrade, F. C., & Woo, T. O. (2014, April). *Self-Concept Clarity: What It Is and Its Consequences*. Paper presented at the annual Made in Millersville Conference, Millersville, PA.

Andrade, F. C., & Woo, T. O. (2014, March). *Self-Concept Clarity, Self-Monitoring, and Preference for Consistency*. Poster presented at the annual meeting of the Eastern Psychological Association, Boston, MA.

Andrade, F. C., & Woo, T. O. (2013, April). *Self-Concept Clarity and Vocational Identity: The Role of Tolerance of Uncertainty*. Poster presented at the annual meeting of the Eastern Psychological Association, New York, NY.

Andrade, F. C., & Woo, T. O. (2013, April). *Self-Concept Clarity and Vocational Identity: The Role of Tolerance of Uncertainty*. Poster presented at the annual meeting of the Student Research Conference, Millersville, PA.

Research Experience

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|--------------|---|
| 2017-Present | Primary Investigator , "Who Tries to Self-Improve After an Academic Failure? Trait Self-Esteem Differences and the Mediating Role of Self-Esteem Distancing Processes" Master's Thesis, Towson University, Towson, MD |
| 2017-Present | Co-investigator , "Instagram Use and Physical Appearance Comparison" |
| 2016-17 | Primary Investigator , "Self-Esteem and Contingencies of Self-Worth: Predicting Responses to Academic Threat" Towson University, Towson, MD Towson University, Towson, MD |
| 2016 | Co-investigator , "Reducing Contingent Self-Worth: A Defensive Response to Self-Threats" Towson University, Towson, MD |
| 2016 | Co-investigator , "Beyond Comparison: Development and Validation of a Measure of Relationship Evaluation Processes" Towson University, Towson, MD |
| 2014 | Primary Investigator , "The Role of Self-Concept Clarity and Attachment Style in Confusions of Self with Romantic Partners" Millersville University, Millersville, PA |
| 2012-13 | Primary Investigator , "The Self-Concept Clarity and Information Processing Style among College Students" Millersville University, Millersville, PA |

- 2013 **Primary Investigator**, “Self-Concept Clarity, Self-Monitoring, and Preference for Consistency”
Millersville University, Millersville, PA
- 2012 **Primary Investigator**, Self-Concept Clarity and Vocational Identity: The Role of Tolerance of Uncertainty”
Millersville University, Millersville, PA

Other Research Experience

- 2018-Present **Research Assistant**, Goal Orientation and Performance
Towson University, Towson, MA
- 2013 **Research Assistant**, “Perception of Math Self-Efficacy and Mathematical Performance among College Students: Ability and Math Anxiety”
Millersville University, Millersville, PA
- Research Assistant**, “Seeing Emotion in a Neutral Face: The Moderating Role of Social Stress on Facial Affect Perception and Mimicry”
Millersville University, Millersville, PA
- 2012 **Research Assistant**, “The Differential Impact of Mortality Salience on Abstract Political Ideology and Decision Making in a Concrete Political Setting”
Millersville University, Millersville, PA

Grants & Awards

- 2018 Graduate Student Association Travel Award
- 2014 Susan P. Luek Award for Graduate Study in Psychology
Reverend Lewis Merwin Hobbs Medallion/Dr. Dominick and Mrs. Helen DiNunzio Award
Student of Academic Distinction
Noonan Endowment Award
Student Research Grant
- 2013 Outstanding Senior Psychology Major Award
Richard J. Hess Memorial Scholarship in Psychology
Neimeyer-Hodgson Research Grant
Outstanding Junior Psychology Major Award

Professional Experience

- Aug 2016-Present **Graduate Assistant, Psychology Department
Towson University, Towson MD**
Assisted with data collection, analyzed data using SPSS, summarized literature reviews, trained and supervised undergraduate research assistants, created surveys using Qualtrics and MediaLab, represented the Experimental Psychology program at open house events, provided general administrative work for supervisor.
- Jun 2017-Aug 2017 **Graduate Writing Assistant, Department of Health Science
Towson University, Towson MD**
Reviewed the literature, analyzed quantitative data using MS Excel, and wrote the introduction to multiple manuscripts on the relationship between the presence of farmers’ markets in food deserts and health outcomes.

- Aug 2016-May 2017 **Graduate Assistant, Department of Health Science
Towson University, Towson MD**
Summarized literature reviews, coded qualitative data using Atlas.ti, transcribed interviews, analyzed quantitative data using MS Excel, summarized results, created conference presentations, assisted with organization of events.
- Feb 2014-May 2014 **Teaching Assistant, Tests & Measurements
Millersville University, Millersville, PA**
Analyzed class data using SPSS and MS Excel, summarized data and created charts, tutored students one-on-one on concepts of test design, psychometrics, and statistics.

