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The Effects of Ego Threat and Self-Esteem Boost on Overall Self-Control Ability

A thesis

presented to

the faculty of the Department of Psychology

East Tennessee State University

In partial fulfillment

of the requirements for the degree

Master's of Arts in Psychology

by

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May 2011

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Keywords: self-control, self-esteem, ego threat, self-esteem boost, ego-depletion

ABSTRACT

The Effects of Ego Threat and Self-Esteem Boost on Overall Self-Control Ability

by

Jessica Williamson

Self-control enables people to make decisions that can promote overall well-being. Such decisions include refraining from overeating or the decision to motivate individuals to persevere when faced with difficulties. The purpose of this study was to determine if not requiring the expenditure of self-control and boosting self-esteem would enable participants to persist longer at a task designed to measure self-control than participants who were required to expend self-control and received an ego threat. No significant main effects were found for self-control manipulations, $F(1, 223) = .54, p = .46$, or for self-esteem manipulations, $F(1, 223) = .01, p = .91$. No significant interaction effects were found. $F(3, 219) = .785, p = .503$.

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CHAPTER 1

INTRODUCTION

The Effects of Ego Threat and Ego Boost on Overall Self-Control Ability

Imagine, for a moment, the following scenarios. An attractive co-worker turned you down when you finally got up the courage to ask him/her out on a date. The manuscript you submitted for a journal was rejected with an overabundance of harsh feedback. If you were to experience these events, you may be tempted to do what many people do when they experience ego threats: procrastinate instead of working on important projects and overindulge in things you enjoy. Instead of revising your manuscript or grading some important tests, you may instead decide to play video games for an hour or eat a bowl of ice cream.

For some people, though, an hour of video game playing can turn into several hours, and the bowl of ice cream can turn into a pint. Your self-esteem is still reeling from the major blows dealt to it throughout the day. You have not accomplished any work, but now you also have a serious stomachache and feel that you are lacking in energy. You are left wondering why in the world you could not control your behavior. Past research has shown that such self-handicapping behaviors as procrastination, being quick to give up, and overindulgence are common when facing scenarios in which an individual's ego has been threatened. This can lead to a reduction in self-control abilities (Adams & Leary, 2007; Crocker & Park, 2004; Heatherton et al., 1991; Miller & Hom, 1990).

Self-Control

Self-control is the exertion of control over the self by the self, the end goal usually being to change the way people would otherwise think, feel, or behave (Muraven & Baumeister, 2000).

It involves overriding a dominant response tendency, even if the dominant response is something people enjoy (Schmeichel & Vohs, 2009). Terms that are considered synonymous to that of self-control include *willpower*, *self-discipline*, and *self-regulation* (Hagger, Wood, Stiff, & Chatzisarantis, 2010).

Self-control is an important characteristic to have in life. For example, an individual must exercise restraint, a form of self-control, to avoid overeating (Adams & Leary, 2007). People also need to control themselves to exercise and stay fit. In this way, self-control is necessary to engage in a healthy lifestyle. Self-control is also crucial for goal-oriented behaviors. If people were not able to stick to their goals, they would fail at many of their endeavors. In this way, self-control enables people to avoid distractions and motivate themselves to do important things like complete projects or meet deadlines (Schmidt, Neubach, & Heur, 2007). Past research has indicated that emotional regulation predicts how successful someone will be socially (Maszk, Eisenberg, & Guthrie, 1999), indicating that individuals need to practice self-control to conform to social standards and ideals (Baumeister, Gailliot, DeWall, & Oaten, 2006). If an individual is unable to conform to social standards, he or she may face rejection and ostracism.

There are two different views on the source and function of self-control. The cognitive model of self-control posits that self-control is a function of people's beliefs, attitudes, and intentions (Hagger et al., 2010). The limited-resource model of self-control, however, states that self-control is a commodity. When this limited resource of self-control becomes depleted, it takes time to restore itself, much like physical energy (Hagger et al., 2010; Muraven & Baumeister, 2000; Vohs et al., 2008). The limited-resource model was later developed into the strength model by Baumeister et al. (Hagger et al., 2010). The degradation of self-control resources often coincides with an increase in subjective and physiological effort, fatigue, and

difficulty performing tasks (Hagger et al., 2010). The strength model of self-control was observed in this study, specifically the occurrence of ego-depletion.

Ego-Depletion Effect

When self-control is exerted, an individual's ability to exert self-control on an immediate, subsequent task requiring self-control is reduced. After a period of rest, however, the self-control resource is replenished. This act of depleting and replenishing self-control is referred to as the ego-depletion effect (See Baumeister et al., 1998; 2006; Hagger et al., 2010; Vohs et al., 2008). Past research on the ego-depletion effect has shown that the function of self-control seems to be similar to that of a muscle (Baumeister et al., 2006; Muraven & Baumeister, 2000; Muraven, Baumeister, & Tice, 1999; Vohs et al., 2008). For example, an individual will become fatigued after strenuous exercise and that individual's ability to continue to exercise will become diminished. Once able to rest for a short period of time, however, people's strength will be replenished, allowing them to continue to exercise. Self-control operates in much the same manner. The ego-depletion effect occurs after initial expenditure of self-control and results in a reduced ability to perform optimally on subsequent tasks involving self-control (Muraven & Baumeister, 2000; Vohs et al., 2008). In addition, when an individual is out of shape, he or she tends to become easily fatigued when he or she first begins exercising. The same is true for individuals trying to exercise self-control over long periods of time when they are not accustomed to expending a lot of effort on self-control. The more an individual exercises self-control, the more he or she is able to overcome the ego-depletion effect (Muraven & Baumeister, 2000; Vohs et al., 2008). The ego-depletion effect is usually observed experimentally by using two unrelated self-control tasks, a method known as the *dual-task paradigm* (Hagger et al., 2010). Such a paradigm requires participants to engage in two consecutive tasks requiring self-control

(Hagger et al., 2010). For example, Muraven et al. (1999) instructed participants to list any and all thoughts they had for 5 minutes. While listing their thoughts, participants were given additional instructions to suppress thoughts of a white bear. Being told to suppress thoughts of a white bear makes the white bear salient in one's mind. Controlling one's thoughts is a difficult task to perform. Participants must expend self-control energy in trying to suppress thoughts of a white bear. After suppressing thoughts of a white bear for 5 minutes, a follow-up measure of self-control was then administered in which participants had to squeeze a handgrip (an exercise tool used to strengthen forearm muscles). Self-control was measured by how long participants persisted in squeezing the handgrip. To control for individual differences in strength, a low-resistance handgrip was used and participants engaged in a baseline measurement of handgrip persistence. It was found that exercises designed to build self-control (proper posture practiced over a 2-week period), fostered greater self-control ability when compared to baseline self-control (measured by persistence at holding the hand-grip device) (Muraven et al., 1999). An interesting additional finding was that self-control ability, when built and strengthened in one situation (practicing posture), can be translatable to unrelated situations in which self-control is required (persisting at squeezing a handgrip). This is also an example of how self-control resembles a muscle that can be strengthened through practice.

Other methods of having participants expend self-control in the past have included instructing participants to remain stoic when watching a video that elicits great emotional response vs. allowing a control group to express their emotions during the video (see Baumeister et al., 1998). All participants then squeezed a hand-grip. It was found that participants who were made to suppress their emotions were not able to squeeze the handgrip for a greater amount of time as the participants who were allowed to express their emotions. In fact, the participants in

the self-control condition could not even match the persistence times of the participants allowed to express emotion. In another study, Baumeister et al. (1998) placed radishes and chocolates in front of participants and told individuals in the self-control group that they had to eat radishes and could not eat chocolates while individuals in the control group were allowed to eat chocolates. It was found that participants required to expend self-control by eating radishes and not chocolates performed poorly compared to participants not required to expend self-control on a subsequent self-control task (attempting to solve unsolvable geometric line-tracing puzzles). Resisting delicious food overrides an automatic response that people have (eating delicious food vs. food people do not like), which would lead to the degradation of self-control resources and a reduced ability to expend self-control (Hagger et al., 2010).

Just like any other muscle, this mental muscle of self-control can be exercised to the effect that self-control capabilities increase and become stronger, allowing individuals to exercise self-control more easily (Muraven et al., 1999). Self-control is similar to physical strength training exercises in that the skills people develop and muscles they build can be used in situations other than the ones an individual has strengthened those muscles under, as demonstrated by Muraven et al. in their posture and handgrip self-control study (1999). Telling participants to constantly remain aware of their posture made participants continuously expend self-control by having to repeatedly remind themselves to sit a certain way. This act of controlling oneself to constantly be aware of his or her actions (with constant awareness being the expenditure of mental self-control) strengthened self-control in such a way that participants who were asked to be aware of and correct posture performed more optimally on an unrelated physical task (squeezing the hand-grip) (Muraven et al., 1999). Anything that requires an individual to expend self-control can result in ego-depletion. Another example of how mental

acts requiring self-control can have an effect on self-control expressed physically can be seen in research such as that of Vohs et al. (2008). Vohs et al. (2008) conducted four studies on how simply making choices can cause an individual to experience ego-depletion. Having to make choices when given many options to choose from subsequently affected participants' physical stamina, whether or not participants persisted in the face of failure, procrastinating behaviors, and quality and quantity of arithmetic calculations participants solved.

The premise for the study on choice-making and its effects on self-control by Vohs et al. (2008) was to address the growing consumer market in which individuals are faced with more and more choices. The authors were interested in how the difficulty in making a choice can deplete executive function resources and have a detrimental daily impact on self-control. Vohs et al. cite Iyengar and Lepper, who conducted a study in which it was found that consumers were less likely to buy anything at all when faced with a large number of options (24 options vs. 6 options). It was also found that consumers who did make a choice to buy a product reported feelings of dissatisfaction with their purchase (Iyengar & Lepper, as cited by Vohs et al., 2008)!

The ego-depletion effect is evident in situations in which an individual is required to be conscious of and maintain a certain level of self-control. Schmidt et al. (2007) assessed cognitive control deficits with a questionnaire designed to measure self-reported failures in perception, memory, and action. The goal of Schmidt et al. was to examine the effects of self-control on how strained one feels at work. Consequences of the ego-depletion effect can be seen in research involving the stress of strains on self-control in the work place and has been shown to manifest itself as cognitive control deficits such as failures in perception, memory, and action (Schmidt et al., 2007).

Intuitively, one may think it takes more effort to perform an action than to not perform an action (Muraven & Baumeister, 2000). However, when one is faced with an action that he or she desires to perform (eating an entire frozen pizza and a couple of doughnuts), it requires self-control to refrain from acting (in this case, pursue a more healthy course of action by not overindulging on delicious but unhealthy foods) (Muraven & Baumeister, 2000). It is much more difficult to abstain from acting when giving in appears to be the easier choice and requires less effort and willpower (Muraven & Baumeister, 2000).

Muraven and Baumeister (2000) say that it is much more likely that an individual will succumb to such self-harming actions if one is coping with stress or often having to regulate negative affect. Continuous self-control efforts, such as constantly having to refrain from desired (but perhaps unhealthy) behaviors, cause a degradation in self-control ability over time. This degradation is not considered to be a result of negative mood or learned helplessness (Muraven & Baumeister, 2000). Specifically, the executive function practice of inhibition relies on a mental resource that appears to be both limited and drainable (Muraven & Baumeister, 2000). Such a degradation could possibly result in poor eating behaviors, procrastination, inability to disengage from addictive behaviors, and overall unhealthy behaviors. An example of how chronic expenditure of self-control negatively affects behavior may be seen in the Adams and Leary (2007) study in which restricted dieters exhibited less self-control ability than nonrestricted dieters. The act of constantly being aware of one's dieting behavior and progress and trying to rigidly control one's eating behaviors may have brought about a chronic expenditure of self-control, resulting in overall reduced self-control ability.

There is physiological evidence to offer insight into this limited-resource model of self-control and provide ideas on how to counteract it. In a recent meta-analysis, Hagger et al. (2010)

outlined a few indicators of ego-depletion based on past research. Such indicators include effort, perceived difficulty, subjective fatigue, and blood glucose levels (Hagger, 2010). Glucose is one of the body's main sources of energy. Reduced levels of glucose have been linked to poorer performance on tests of self-control (Gailliot & Baumeister, 2007; Gailliot et al., 2007; Masicampo & Baumeister, 2008). Gailliot et al. (2007) found that when participants engaged in acts that required self-control (Stroop tasks, thought-suppression tasks, regulating emotions, and controlling attention), a reduction in blood glucose levels was observed. Just one act of self-control can cause an individual's blood glucose levels to drop below what is considered optimal, which in turn makes it more difficult for individuals to persist at follow-up self-control tasks (Gailliot et al., 2007). Drinking a glucose drink between an initial task requiring participants to expend self-control and a follow-up self-control measure eliminated impairments previously found between the initial and follow-up self-control tasks.

In concordance with this limited-resource model of self-control, can anything be done to counteract the effects of ego-depletion? Tice, Baumeister, Shmueli, and Muraven (2007) conducted four experiments to determine whether positive affect counteracted the ego-depletion effect. Participants in the first experiment had to suppress thoughts of a white bear as part of the first task to make them expend self-control. They then had to drink as much of an unpleasant tasting beverage (that they believed was healthy) as they could in the follow-up self-control task. In a second experiment, participants were made to engage in a mental control task in which they had to stifle unwanted thoughts as the first self-control task. Participants then were given the choice to persist at solving a difficult but solvable task or move on to something more pleasant. Persistence times were recorded. In the third experiment participants also had to suppress thoughts of a white bear in a thought-listing task. During the follow-up task participants persisted

at squeezing a handgrip. In experiment four participants had to resist eating tempting foods to expend self-control and then were asked to solve a task that was actually unsolvable with persistence times being recorded.

To induce positive mood in the first experiment, participants were given a surprise gift. In the second and fourth experiments, the positive mood induction involved participants watching a tape of Robin Williams, a stand-up comedian, while participants in study three watched a tape of comedian Eddie Murphy (both of these were compared to neutral tapes of dolphins or a rest period that involved no stimuli). It was found that participants who received a gift or watched a comedic tape after having to expend self-control performed just as well on a subsequent self-control task as participants who did not undergo ego-depletion. These same participants also performed significantly better on follow-up measures of self-control than participants who underwent a sad mood induction, a brief rest period, or a neutral stimulus. Tice et al. (2007) found that the ego-depletion effect can be counteracted when an individual's mood is elevated.

Schmeichel and Vohs (2009) also conducted four experiments to determine whether self-affirmation had the effect of facilitating self-control when self-control resources had been depleted. Self-affirmation is an individual's cognitive or behavioral assessment of his or her own moral integrity and adequacy, which includes positive feedback from others. To get participants to engage in self-affirmation, Schmeichel and Vohs had them express their core values. Schmeichel and Vohs's reasoning was that self-affirmation causes threatened individuals to act as though they had not been threatened. Self-affirmation serves to release individuals from defensive reactivity to threats to their self-regard and may, therefore, counteract the ego-depletion effect.

In experiments one and two Schmeichel and Vohs (2009) found that there were indeed benefits of self-affirmation when an individual was undergoing ego-depletion. In experiments three and four Schmeichel and Vohs found that, when intervening and inducing self-affirmative behaviors, the results indicated improved self-control in that it had the effect of elevating levels of mental construal. They stated that using self-affirmative strategies could reduce the potential for lapses in self-control.

If a positive mood induction and self-affirmation can counteract the ego-depletion effect, what are the implications for the effects of self-esteem on self-control ability? Self-esteem is how an individual defines his or her worth (Leary & Baumeister, 2000). If an individual's view of his or her own worth or value is skewed or not an accurate mirror of what he or she is actually capable of, would this not affect his or her mood and, in turn, influence self-control ability?

Self-Esteem

Leary and Baumeister (2000) state that global self-esteem originates from global value judgments about the self. They also state that domain-specific self-esteem originates from an individual's assessment of his or her value in particular areas, such as one's intelligence, social ability, etc. They go on to define self-esteem thusly:

“Self-esteem is, by definition, a subjective judgment and, thus, may or may not directly reflect one's objective talents or accomplishments.” (p. 2)

Self-esteem is, most importantly, a way in which people appraise their own value (Leary & Baumeister, 2000). Individuals do this through inspection of their own actions. Some actions are viewed dispassionately while other actions, upon appraisal, are viewed very emotionally (Leary & Baumeister, 2000). People are not only cognizant of the good and bad things they do,

they also have emotional reactions to their own deeds (Leary & Baumeister, 2000). This positive or negative appraisal of subjective attributes or deeds can serve to boost or lower self-esteem.

Self-esteem is a prominent factor in people's lives and is considered to be one of the primary pursuits of humanity (Crocker & Park, 2004; Leary & Baumeister, 2000). The contingencies of an individual's self-esteem may not always be congruent with those of the society she or he lives in, but that does not mean that an individual's self-esteem can remain unaffected (Leary & Baumeister, 2000). Whether a person feels worse about the promotion she or he was passed up for or congratulates him- or herself when told how good of a job was done on a project, an individual's self-esteem does not exist in a vacuum. Research (Schmeichel & Vohs, 2009) has shown that threats against an individual's ego cause a drop in self-esteem. When an individual perceives a potential ego-threat, he or she may react in ways considered destructive or self-handicapping (Crocker & Park, 2004). Such handicapping behaviors include hostility toward the source of the ego threat among individuals with high and unstable self-esteem, thus possibly attributing to the circumstances that lead to another ego threat in the future. Among individuals very sensitive to rejection and whose self-esteem is contingent upon being accepted, rejection will be seen in ambiguous acts of other people (even when rejection is not really present). For these individuals, constantly perceiving rejection results in them reacting in ways that they hope will bring reassurance of their acceptance when in fact their actions undermine their relationships (Crocker & Park, 2004).

Naturally, people think that high self-esteem is preferable to low self-esteem. This is not the case, however, as Baumeister, Boden, and Smart (1996) have discussed. Baumeister et al. suggest that it is the act of highly appraising oneself that may lead to violence. They suggest that this elevated egotism may lead an individual to feel that he or she is superior to others in many

ways and is thus entitled to more resources as well as other things that he or she desires. This sense of superiority to other individuals may also allow these high-egotism individuals to mistreat or act aggressively against those who they feel are inferior to them. Researchers in the past have suggested that low self-esteem leads to aggression and crime. However, Baumeister et al. suggest otherwise. It has been posited that instead of low self-esteem, threatened egotism could possibly be a cause of violence and aggression (Baumeister et al., 1996). Individuals whose views of themselves and their superiority are inflated, unstable, or unsure are considered more prone than individuals with less inflated views of themselves to perceive actions of others as ego threats and thus react more violently or aggressively (Baumeister et al., 1996).

Throughout the long history of research on self-esteem, many different facets and types of self-esteem have been explored and established (for instance, stable and unstable, explicit and implicit). Though different theorists posit different mechanisms of self-esteem, the underlying theme that most researchers tend to agree on about self-esteem is that, by definition, self-esteem involves people evaluating themselves. Theorists also agree that individuals feel that they must not only maintain higher levels of self-esteem but that they also must defend their self-esteem against any perceived threats (Pyszczynski et al., 2004). There are considered to be six perspectives on the nature and function of self-esteem, which are: (1) well-being and positive affect, (2) successful coping, (3) self-determination, (4) dominance maintenance, (5) terror management, (6) sociometer (Leary & Baumeister, 2000). For the sake of brevity, only terror management and sociometer theories are discussed in detail as they have received the most empirical support.

Terror Management Theory

Pyszczynski et al. (2004), in considering why people need self-esteem, assert that terror-management theory was the first theory empirically developed to address the question of the human need for self-esteem. Terror-management theory asserts that self-esteem is a culturally contingent construct and that higher self-esteem relies on whether or not an individual sees him or herself as living up to the values of that culture (Pyszczynski et al., 2004). The development of self-esteem starts with and is maintained via a process of consensual validation (Pyszczynski et al., 2004). In the beginning, children rely on their parents' acceptance and respect to validate their self-esteem (Pyszczynski et al., 2004). Terror Management Theory posits that self-esteem, along with a positive worldview, protects an individual from the anxiety she or he feels when made aware of his or her mortality (Landau, Greenberg, & Sullivan, 2009).

Schmeichel et al. (2009) performed three studies to assess the roles of implicit and explicit self-esteem in reactions to mortality salience as well as how self-esteem serves as a buffer against anxiety in terror-management theory. Participants in the first study had to complete name-letter-ratings (e.g., participants rated the attractiveness of all 26 letters in the English alphabet with 1 = *not at all beautiful* and 7 = *extremely beautiful*) as a measure of implicit self-esteem. Implicit self-esteem levels were derived from how participants rated letters that made up their own initials as being attractive. Participants were then either asked to write about death or a control topic. Finally, participants completed a measure of worldview defense in which they had to read and rate two handwritten essays supposedly written by foreigners about the United States. It was found that writing about death, when compared to writing about a control topic, served to increase worldview defense among participants who were labeled as low

in implicit self-esteem. However, these results were not found among participants high in implicit self-esteem.

Participants in study two had to write about either their own death or dental pain. Participants then either underwent an implicit self-esteem boost or no-boost task. The implicit self-esteem boost was a computerized lexical decision task with the word *I* being followed by positive traits such as *handsome* or *smart*). The no-boost involved the same positive words, though they were not preceded by the word *I*. Participants then responded to the same essays as described in study one as a measure of worldview defense. It was found that an implicit self-esteem boost served to reduce the effect of mortality salience on worldview defense.

Participants in study three were told that the study examined personality. Implicit self-esteem was measured by having participants categorize words as either being related to or not related to the self. Participants also had to categorize whether the words were pleasant or unpleasant by pressing one of two computer keys. The associations were then reversed and participants were asked to categorize words as either related to the self or unpleasant with one key and, with the other key, categorize words as either unrelated to the self or pleasant (essentially, the pairings were reversed). The difference in reaction times on the task was considered to be a determinant of implicit self-esteem with faster categorizations when the self was paired with pleasant vs. self being paired with unpleasant being indicative of higher self-esteem. The Rosenberg Self-Esteem Scale was used to measure explicit self-esteem. Participants then underwent a mortality salience induction in which they had to describe their emotions when asked to think of their own death. In this imagined death scenario, participants had to describe what would physically happen to them after they died as well as what their deaths would mean to their loved ones. For the dependent measure, participants were required to rate counterbalanced

personality descriptions on how accurate, relevant, and complete each description was in describing the participant's personality. It was found that mortality salience increased the likelihood of participants rating highly personality descriptions that were considered to be positive, supporting the theory that self-esteem serves as a buffer against anxiety (Schmeichel et al., 2009).

Self-esteem is attained when an individual believes that she or he is an asset in the world. This feeling of being valued brings about a sense that the significance of an individual exists even after death (Landau et al., 2009). It is believed that mortality salience has led to death-transcending cultural belief systems and that self-esteem provides a sense of security (Pyszczynski et al., 2004). This development is also believed to provide the adaptive benefit of a more flexible mode of self-regulation and behavior control, two aspects which are very important for social survival (Pyszczynski et al., 2004). Without the ability to control oneself and one's behavior, the likelihood of social ostracism increases the possibility of rejection and would most likely lead to reduced self-esteem.

Sociometer Theory

The sociometer theory of self-esteem posits that the purpose of self-esteem is to monitor the reactions of others and alert an individual when there is a possibility that he or she may be socially excluded (Leary, Terdal, Tambor, & Downs, 1995). Self-esteem is also considered an individual's internal appraisal of whether or not she or he is considered valuable to the groups she or he belongs to or wishes to belong to (Leary & Baumeister, 2000). Leary et al. (1995) performed five studies to test hypotheses derived from the sociometer model of self-esteem.

The first study dealt with self-feelings and anticipated inclusion-exclusion (Leary et al., 1995). Participants in this study had to read a list of behaviors and describe how they felt other

people would react to the behaviors while also rating how they would feel about themselves if they were to perform the behaviors. Results indicated that the effects of the events on participants' self-esteem actually paralleled their assumptions that engaging in such events would cause other individuals to reject or accept the participant.

Study two focused on reactions to exclusion. Study two was considered more realistic than study one (which focused on hypothetical situations and participants having to assume how other people would react to certain situations) because study two had participants recall a situation or experience in which they had been excluded. The situations they wrote about involved recalling either positive or negative emotions. Participants were asked to answer questions about the event with the questions involving ratings on whether or not they perceived they had been excluded and how they felt about themselves. Participants' ratings of the degree to which they felt included in an actual social situation were found to be highly correlated with their feelings of self-esteem.

The third study examined participants' reactions to being excluded from a group. Participants were told that they were either excluded or included in a laboratory work group and that this decision was based either on a random procedure or on other group members who had decided to include or exclude the participant. Results indicated that social exclusion caused a decrease in self-esteem when participants were excluded for personal reasons by group members, but not when the exclusion was random.

Study four was designed to extend the findings of study three. Participants used an intercom to provide information about themselves to an anonymous participant in another room. After this, participants received feedback from the other participant about whether or not they were accepted and included or rejected and excluded. Participants subsequently rated their

feelings about themselves on a questionnaire they were led to believe would be seen by either the same participant who had previously listened to them or to a new participant. The results of study four were similar to those of study three.

Study five looked at individual differences in self-esteem. The Perceived Inclusionary Status scale was constructed and pilot tested on a sample of 150 participants. This scale consists of nine items that assess the extent to which individuals feel they are included vs. excluded by others. Self-esteem was measured with two scales – Rosenberg’s State Self-Esteem Scale and a scale of self-relevant mood items. It was found that trait self-esteem was highly correlated with the degree to which participants felt included or excluded by other people. There have been several other studies that have shown evidence to support the sociometer theory of self-esteem (see Leary, 2005).

Back et al. (2009) conducted a study to evaluate the effects of three self-esteem measures based on the integration of sociometer theory and information-processing models. They suggest that the three self-esteem measures are self-report, an implicit association test, and an affective priming task. When in new, unfamiliar, and unpredictable social situations, people who have high trait self-esteem perceive to be valued and report feeling popular, whereas people with low trait self-esteem do not (Back et al., 2009). This indicates that when an individual is in an unfamiliar social situation, the perception of being valued is seen as necessary for self-esteem (Back et al., 2009). Direct measures, in the form of self-reports, have been used to assess explicit self-esteem. However, it is posited in sociometer theory that self-esteem is built up by processes that are considered to occur automatically and unconsciously (Back et al., 2009). Even when in new and unfamiliar situations, an individual still feels the need to be valued. This need exists even when the other person is a stranger.

Self-Control and Self-Esteem

People seek to boost their self-esteem by investing effort in tasks they feel are relevant to their self-worth. Success in completing the self-esteem relevant task is an ego-boost, while failure places strain on self-worth and lowers self-esteem (Crocker & Park, 2004). A self-esteem boost is something that makes people feel better about themselves such as positive feedback on a self-esteem relevant area like an intelligence or creativity test (Zhang, 2004). An ego threat is an incidence or occurrence that makes people worse about themselves. Ego threats have been found to increase appetite and eating behaviors. This is contrary to the appetite suppressant effect of physical threats, which may indicate impairment in self-control ability (Heatherton, Herman, & Polivy, 1991). Conceptualizing what constitutes as an ego threat is somewhat difficult and researchers have been providing a plethora of operational definitions and mechanisms for this construct for years (Leary et al., 2009). To properly define ego threat, one must clarify what is meant by *ego*. In an article exploring the history of the conceptualization of ego threat, Leary et al. (2009) stated that, for the past 50 years, ego has been viewed either as an aspect of personality that regulates behavior or a person's self-image or self-esteem. For the purpose of my study, ego refers to a person's self-esteem (meaning that I am challenging or boosting individuals' positive self-image).

Can a self-esteem boost counteract the ego-depletion effect as a positive mood induction has been shown to do in past research (Tice et al., 2007)? When not faced with anything that depletes the ego, individuals seem capable of exercising self-control adeptly (Robinson, Schmeichel, & Inzlicht, as cited by Schmeichel & Vohs, 2009). Along these same lines, past research by Miller and Hom (1990) has indicated that individuals are less likely to undergo ego-depletion following an ego threat when extrinsic motivation is involved, such as a reward or

being told that the task at hand is difficult. The reward of being told that one does very well on a creativity test, even going as far as to say that he or she has made the highest score seen so far, may be enough to counteract the effects of ego-depletion during a follow-up measure of self-control.

Current Study

Because self-esteem is considered a constant, unconscious, underlying pursuit of all humans, it is important to study how self-esteem boosts and threats to self-esteem can affect self-control (Crocker & Park, 2004). Almost every action a human commits to is a forward step in an unconscious design to maintain positive self-esteem. Common contingencies of self-esteem such as social acceptance, often require that an individual expend self-control (Leary et al., 1995). In the example of self-esteem being contingent on social acceptance, an individual would have to exercise self-control to conform to societal rules. Not doing so might cause people to be excluded and rejected, thus making them appraise themselves as being unimportant to other people. This would lower an individual's self-esteem if his or her self-esteem is contingent upon social acceptance. Continuing with this example, it has been shown that individuals with low self-esteem and who desire social acceptance often fear rejection so much that they see it everywhere. These individuals have also been shown to exhibit lapses in self-control. Such people constantly seek affirmation from others that they are liked and valued (Back et al., 2009; Crocker & Park, 2004; Maszk, Eisenberg, & Guthrie, 1999). Because low self-esteem can create an insecurity that disallows people to control themselves in their desire for social acceptance, it seems intuitive that fostering and stabilizing a healthy form of self-esteem would allow people to exercise more self-control ability. Exercises in self-control alone (such as controlling oneself to be conscious of posture) (Muraven et al., 1999) may not ensure that a person will be successful all

the time in maintaining self-control. Perhaps a sense of confidence brought about by stable, positive, and healthy self-esteem is also a key component in properly exercising self-control.

As previously stated, self-esteem is considered one of the primary pursuits of humans (Crocker & Park, 2004), but recent research has indicated that the pursuit of self-esteem and the emphasis on boosting self-esteem can potentially be harmful, especially if one's self-esteem is unstable and inflated (e.g., Baumeister et al., 1996; Crocker & Park, 2004). Neff and Vonk (2009) instead propose that self-compassion is a healthier way of relating to oneself than self-esteem because self-compassion is considered to lack the component of egotism that self-esteem has. Self-compassion entails treating oneself with kindness, recognizing one's shared humanity, and being mindful when considering negative aspects of the self (Neff & Vonk, 2009). Examples of self-compassion would be comforting oneself when doing poorly on a task such as earning a bad grade on a quiz or conceding that having a doughnut while on a diet is not the end of the world and one should not beat oneself up over it.

Although prior research has shown that self-compassion is related to greater psychological well-being, little research had examined the relationship between self-compassion and behavior. One study conducted by Adams and Leary (2007) on the self-compassionate attitudes of restricted vs. nonrestricted dieters suggested that individuals who possessed high levels of self-compassion or who were asked to exercise compassion towards themselves were less likely to impose strict rules and attitudes on themselves and therefore did not suffer an extreme loss of perceived self-control after 'breaking' their diet. Upon breaking from their diet, restricted dieters seemed to hold the mentality of, "Well, I went off my diet, I may as well indulge since I was not supposed to go off of it in the first place," and subsequently exhibited less self-control than nonrestricted dieters.

In fact, restricted dieters, upon breaking from their diet, seemed to experience a lapse in self-control similar to that in people recovering from addictions. This lapse is known as the *abstinence violation effect* and occurs when an individual succumbs to something he or she had been resisting (like drugs, alcohol, or a doughnut) and subsequently continues to engage in the lapse instead of trying again to overcome the addiction (Witkiewitz & Marlatt, 2004). Nonrestricted dieters did not seem to hold the same attitude and exhibited more forgiveness in the face of their lapses in dieting. The participants who did not strictly control their diet in the Adams and Leary (2007) study were not shown to engage in the abstinence violation effect as often as participants who did strictly control their diets. This indicates that self-compassion may lower the occurrence of lapses in self-control and help people exhibit more self-control in the face of failure or lapses in momentary self-control (Adams & Leary, 2007).

No other studies examining the impact that self-compassion has on self-control have been conducted, however. As a result, Clark, Williamson, Watkins, and Blackhart (2010) sought to examine this relationship. A correlational found that there was a significant, positive relationship between general self-control (assessed by the Self-Control Scale-Short Version, Tangney et al., 2004) and self-reported self-compassion (assessed by Self-Compassion Scale, Neff, 2003). When the effects of self-esteem were controlled for, however, self-compassion had less of an impact on self-control (though the impact remained statistically significant). The results of the study indicated that perhaps self-esteem may be a better predictor of general self-control than self-compassion.

A second study (Watkins, Williamson, & Blackhart, 2011) was designed to experimentally test the effects of induced self-compassion on self-control abilities. Participants were randomly assigned to either suppress thoughts of a white bear while listing their thoughts or

simply list their thoughts. They then underwent a self-compassion induction (they wrote kindly to themselves as they would to a friend about their performance on the thought listing task, whether or not they had to suppress thoughts of a white bear; see Leary et al., 2007). Finally, they were given unsolvable puzzles as the follow-up measure of self-control and persistence at solving the puzzles was timed. Because Watkins et al. (2011) found that self-compassion had no impact on the ego-depletion effect, and because Clark et al. (2010) found that the relationship between self-compassion and self-control was weakened when self-esteem was controlled for, we began to question the exact nature of the relationship between ego-depletion and self-esteem.

Self-compassion is supposed to have a positive effect on mood and sense of self and supposedly lacks the negativity of egotism found in self-esteem (Neff & Vonk, 2009). However, the finding made by Clark et al. (2010) in which self-compassion had less of an effect on self-control when self-esteem was controlled for suggests that self-esteem, which can affect mood, may be more impactful on self-control than past research has originally considered. Tice et al. (2007) found that elevating participants' mood counteracted the ego-depletion effect. In addition, ego threats have been found to affect self-esteem negatively, which in turn can cause lapses in self-control (e.g., people who experience an ego threat may overeat) (Heatherton et al., 1991). If negative feedback can cause a reduction in self-esteem, which in turn has an effect on self-control ability, and if elevating participants' mood also has a positive effect on self-control ability, then positive feedback designed to boost an individual's self-esteem should also have an impact on self-control ability and perhaps even counteract the ego-depletion effect.

The importance of discovering that boosts to self-esteem can have a positive impact on self-control could have many clinical implications if the egoist component of self-control can be controlled in order to make self-esteem healthy and stable. The egoist component of self-esteem

is undesirable because it may lead to narcissism and high, fragile self-esteem. High, fragile self-esteem may provoke unhealthy reactions when an individual experiences a self-esteem threat, such as aggression. Further research could explore the connection between self-esteem and self-control more thoroughly and find ways to help individuals coping with problems in which lapses of self-control play a major role. Such problems include eating disorders (both weight loss and weight gain) (Adams & Leary, 2007; Miller & Hom, 1990), impulse control/self-injurious behaviors (Marzullo, Progar, & Morales, 2009), as well as drug and alcohol addiction and other behavioral disorders. Often when people have lapses of self-control in such circumstances, they may attribute the temporary set-back to a character flaw instead of a natural occurrence that is part of the human condition (Witkiewitz & Marlatt, 2004). This may be caused by or attributed to low self-esteem. Finding a way to boost and make stable self-esteem to allow people to relate to themselves in a healthy manner may help individuals avoid such cognitive setbacks and thus avoid chronic lapses in self-control.

The purpose of my study was to further explore the impact of self-esteem on self-control abilities by either boosting the self-esteem or threatening the ego of an individual. Participants were assigned to either a self-control task (suppressing thoughts of a white bear while listing thoughts) or a non-self-control task (simply listing thoughts) and then either had their self-esteem boosted or threatened. Finally, all participants engaged in a follow up self-control task to observe the potential ego-depletion effect. I hypothesized that individuals who did not expend self-control would exhibit more persistence on a follow-up measure of self-control than participants who did expend self-control. I also hypothesized that individuals who received a threat to their ego would experience a temporary reduction in self-esteem and would not persist as long on a follow-up task designed to measure self-control ability. Finally, I hypothesized that

participants who did not expend self-control and who received a self-esteem boost would exhibit more persistence on a follow-up measure of self-control than participants who expended self-control and who received a threat to their self-esteem.

CHAPTER 2

METHOD

Sample and Procedures

Approval was granted to perform this study by East Tennessee State University's Institutional Review Board. A power analysis was conducted using G*Power for a 2x2 ANOVA for which the suggested α was .05, with power of .80, and $F(3, 266) = 1.866$. The power analysis indicated that the sample size should include 266 participants in order for the power to be equal to .80. The Participants were 223 (68 males, 155 females) students over the age of 18 years recruited from a southeastern regional university student pool. Participants signed up voluntarily for the study through Sona Systems, a software system created for recruiting human subjects. Participants received course credits that could be applied to several different classes as allowed by individual professors.

Once participants arrived at the lab, they read and signed the consent form. Participants then completed several personality questionnaires (see below). Next, participants engaged in a cognitive thought-listing task in which they were asked to list their thoughts on a piece of paper for 5 minutes. Prior to the start of the task, participants were randomly assigned to either a self-control group or to a non-self-control group. Those in the self-control group were instructed to not think of a white bear while listing their thoughts (Tice et al., 2007). They were given additional instructions to make a mark at the top of the page on which they were listing their thoughts every time they thought of a white bear. This task is designed to cause the participant to expend self-control by actively trying to control their thoughts to avoid thoughts of a white bear. Participants who were in the non-self-control condition were simply asked to list any and all thoughts for the cognitive thought-listing task.

Once participants completed the cognitive thought-listing task, they completed a self-esteem manipulation. Participants were randomly assigned to either a self-esteem boost or an ego threat condition. Those in the self-esteem boost condition were given an ‘easy’ creativity test, whereas those in the ego-threat condition were given a ‘difficult’ creativity test (Baumeister, Heatherton, & Tice, 1993). Neither version of the creativity test was a real measure of creative ability, and the feedback for both tests was false. The test had two parts and participants were told that the first part dealt with thinking of creative alternative uses for an item, while the second part dealt with creatively thinking of problems that might arise from a certain scenario. They were told that they would receive one task at a time and would have 3 minutes to complete each task. In the first task, those in the self-esteem boost condition were told to think of and list alternative uses of a brick, while those in the ego-threat condition were told to think of and list alternative uses of a doughnut. Thinking of alternative uses for a doughnut may be more difficult than thinking of alternative uses for a brick and contributes to the reality of the participants’ potential failure. For the second task, participants were asked to suppose that they could fly or walk in the air without being in an airplane or similar vehicle, and then list potential problems that this might cause. For each task, those in the self-esteem boost condition had eight blank spaces, while those in the ego-threat condition had 30 blank spaces. Although participants were told to think of as many things as they could for each task, and not explicitly told to fill in all numbered spaces, the fact that the ego-threat tasks had 30 spaces (while the self-esteem boost tasks had eight spaces) made the difficult creativity test more threatening and the possibility of failure more salient as participants only had three minutes to complete each component of the creativity test.

Once participants completed each task, their answers were collected and participants were told that their answers were going to be scored based on how many items they listed for each task as well as how reasonable and creative the items they listed were. Upon return of the researcher, participants in the self-esteem boost manipulation were told that they received 40 out of 50 points, which equated to the 90th percentile. They were told that in past research the average score on the creativity test has been 24 out of 50 points which equated to the 48th percentile with a standard deviation of 7.69. The participant was informed that his or her score was well above average and was in fact the highest score the researcher had seen so far.

Participants in the ego threat condition were also told that their answers were going to be scored based on how many items they listed for each task, as well as how reasonable and creative the items they listed were. Upon return of the researcher, the participants were told that their score on the creativity test was 11 out of 50 points, which was equivalent to the 19th percentile. They were also told that in past research in which this particular creativity test had been used, the average score of participants was 24 out of 50 (which is equal to 48%). They were informed that their score, when compared to past scores, was a relatively low score on the creativity test.

Participants in both conditions were then given a state self-esteem questionnaire (Heatherton et al., 1991) to measure self-esteem after the ego threat/self-esteem boost. This questionnaire was used as a manipulation check to ensure that the self-esteem manipulation worked. To determine whether the self-esteem manipulation had any effect on ego-depletion, participants were given a second self-control task which required them to trace geometric figures (Baumeister et al., 1998; Tice et al., 2007). Participants were given the instructions to trace over all of the lines in each puzzle without lifting the pen or retracing over a line already traced. There were seven puzzles – the first two were example puzzles that the experimenter completed to

show the participants how to perform the task. The remaining five puzzles were for the participant to complete. These geometric puzzles were actually unsolvable. The goal of this part of the experiment was to time how long the participant persisted at trying to solve the puzzles. Participants were told that they could have as much time as they needed to work on these puzzles and to alert the experimenter when they finished or if they did not wish to continue working on the puzzles (they had the choice to stop if they were not finished). However, they were actually stopped if they continued working after 30 minutes had elapsed. The amount of time spent trying to solve the unsolvable puzzles (in seconds) was the dependent variable.

After participants alerted the experimenter that they were finished, the puzzle task was taken away and participants then completed a demographics questionnaire asking information about age, gender, race, primary language, and ethnicity. Participants then completed a postexperimental inquiry designed to detect whether or not participants had received knowledge of the experiment before engaging in the experiment (e.g., a friend who had completed the experiment told the participant that deception was used and what the study was really about) or detected the purpose of the study while participating. The data of any participant who indicated that the study was really about how the creativity test may have affected their self-control abilities was removed from the statistical analyses. Finally, participants were debriefed. During the debriefing the participant was informed of what the true goal of the study was (i.e., to examine how self-esteem affects self-control), that the feedback they received from the creativity test was false, and that the puzzles were actually unsolvable. It was explained to participants what the role each of these deceptions was in the study and why it was deemed necessary to use deception to test the hypotheses of the study.

Materials

The materials are listed in the order administered. Participants first completed questionnaires assessing trait self-esteem, self-efficacy, and self-control in order to control for those variables in the current study. The order of administration and timing were two important factors in this study in order to observe the ego-depletion effect, which is thought to last 10-12 minutes (Gailliot et al., 2007; Tyler & Burns, 2008). The length of time at which the ego-depletion effect ceases to affect self-control has not been established. No past research has explicitly examined how long the ego-depletion effect lasts; therefore, I sought to make sure that the time that elapsed between the first and last self-control tasks was as close to 10 minutes as possible, as this is often standard (though not established) in research involving the ego-depletion effect. See the Appendix for all measures.

Rosenberg Self-Esteem Scale (RSES, Rosenberg, 1965). The Rosenberg Self-Esteem Scale contains 10 items scored on a four-point Likert scale (ranging from *strongly agree* to *strongly disagree*). The scale was originally developed from 5,024 high school juniors and seniors from 10 different randomly selected schools in the state of New York. It contains five reverse-scored items. Scores from individual items are summed, with a higher score indicating higher self-esteem. Sample items include, “*On the whole, I am satisfied with myself,*” and “*At times, I think I am no good at all.*” Reliability for the test was evaluated using Chronbach’s α (Rosenberg, 1965; Sinclair et al., 2010). For the overall sample, the Chronbach coefficient α was .91 (Sinclair et al., 2010). The scale has been shown to have a test-retest reliability of .88 (Silber & Tippet, 1965).

Because some effects of self-efficacy on self-control have been observed (Hagger et al., 2010), two measures of self-efficacy were included in this study to observe and control for the

possible effect of self-efficacy. These measures are the General Self-Efficacy Scale and the New General Self-Efficacy Scale. The reason two different measures were used instead of one is because there does not appear to be a general consensus as to which measure of self-efficacy is preferable.

General Self-Efficacy Scale (GSES). The GSES was developed by Jerusalem and Schwarzer (1995) to assess general perceived self-efficacy in order to predict both coping with daily hassles and adaptation to stressful life events for participants 12 years of age and older. It is a 10-item survey scored on a five-point Likert scale (1 *Not at all true* to 5 *Exactly true*). The GSES has also been used to measure improvements in self-efficacy over time. Since the scale's inception, various co-authors have adapted it into 26 other languages. Its reliability has been supported in samples from 23 nations. It has a Cronbach's α ranging from .76 to .90, with the majority in the high .80s (Schwarzer & Jerusalem, 1995). Its criterion-related validity has been documented in several correlation studies, with positive coefficients found with favorable emotions, dispositional optimism, and work satisfaction (Schwarzer & Jerusalem, 1995). Its internal consistency has been found to be .81 (Shi & Wang, 2005). Negative coefficients were found with depression, anxiety, stress, burnout, and health complaints (Schwarzer & Jerusalem, 1995). Examples of items include "*I can always manage to solve difficult problems if I try hard enough,*" and "*If someone opposes or is against me, I can find a way to get what I want.*"

New General Self-Efficacy Scale (NGSES; Chen, Gully, & Eden, 2001). The NGSES is an eight-item scale scored on a five-point Likert scale (1 *Strongly disagree* to 5 *Strongly agree*). It was created in reaction to claims of past research that the Sherer et al. General Self-Efficacy Scale (1982) (SGSES - not to be confused with the GSES developed by Schwarzer and Jerusalem) contained low content validity. After the NGSES was developed, its psychometric

properties and validity were compared to the SGSE. Results from two separate studies indicated that, despite its brevity when compared to the SGSES, the NGSES contained higher construct validity and that it was also revealed to have high reliability and was able to predict specific self-efficacy for a multitude of tasks performed in several different contexts (Chen et al., 2001). Test-retest reliability ranges from .62 - .66. Alpha levels range from .85 - .87. The NGSES was also found to influence performance on following specific self-efficacy formations. Example items include, “*I will be able to achieve most of the goals that I have set for myself,*” and “*I am confident that I can perform effectively on many different tasks.*” Both the NGSES and the GSES are scored by summing all of the scores. There are no reverse scored items on either measure.

Self-Control Scale-Brief Version (SCS-BV). The Tangney, Baumeister, and Boone (2004) Brief Self-control Scale is a 13-item scale designed as a shorter version of the Self-Control Scale. Tangney et al. (2004) created a 93-item pool that included several areas of self-control failure (i.e., being able to control thoughts, emotions, impulses, and being able to regulate one’s actions). A five point scale was used (1 *not at all like me* to 5 *very much like me*). The 93-item pool was then reduced to 36 items, with authors Tangney et al. (2004) removing items with low item-total correlations, duplicate items, and items of which answers could be affected by gender differences. Along with the construction of this 36-item scale, a 13-item scale, the Brief Self-Control Scale, was also constructed (Tangney et al., 2004). In two separate studies, the Brief Self-Control Scale correlated with the Total Self-Control Scale at .93 and .92 (Tangney et al., 2004). Test-retest reliability was .89 for the SCS and .87 for the Brief SCS. The reason for the weaker effects of the second study is because the authors had partialled out social desirability when they noticed that there was a strong correlation between social desirability and self-control (Tangney et al., 2004).

Example items include, “*I am good at resisting temptation,*” and “*I do certain things that are bad for me, if they are fun.*”

Heatherton and Polivy State Self-Esteem Scale (HPSSSES). The Heatherton and Polivy State Self-esteem Scale (Heatherton et al., 1991) is designed to assess transient changes in self-esteem. Although self-esteem is often a trait or generalized characteristic, states of being, such as an ego threat, can induce temporary fluctuations in self-esteem (Heatherton et al., 1991). The State Self-Esteem Scale has 20 items on a five-point Likert scale (1 *not at all* to 5 *extremely*) that were modified from the Janis-Field Feelings of Inadequacy Scale (Janis & Field, 1959). The HPSSSES has three factors that are correlated. These factors consist of performance, social, and appearance self-esteem (Heatherton et al., 1991). Heatherton et al. (1991) conducted five studies examining these three factors and found that performance state self-esteem was affected by failure that occurred in the real world and in laboratory settings, though social state self-esteem was influenced by failure in a public (laboratory) setting, but state self-esteem was not affected by a nonpublic failure such as failing an exam. The appearance factor of self-esteem remained stable, however, when faced with failure in a laboratory or academic setting (Heatherton et al., 1991). Examples of items include, “*I feel satisfied with the way my body looks right now,*” as well as “*I feel frustrated or rattled about my performance,*” and “*I am worried about what other people think of me.*” The scale has an alpha of .92. When compared to other scales like the Janis-Field Feelings of Inadequacy Scale or the Rosenberg Self-esteem Scale, the HPSSSES reliability scores are .76 and .72, respectively.

Statistical Analyses

Participants with missing data that were directly related to the hypotheses, such as time spent on the puzzle or the conditions the participants were in, were removed from analyses.

There were a total of 223 participants. Data of five participants were removed from the study. One participant wished to have his or her data removed, and the other four admitted to having prior knowledge or to having figured out the true hypothesis of the study during the study. If a participant indicated on the postexperimental inquiry that he or she had prior knowledge or guessed the true hypothesis of the experiment, or if the experimenter noted that a participant verbally admitted to knowing what the experiment was about, data for that participant were also removed. It was extremely important that participants did not know beforehand that the study involved deception. If a participant knew that the feedback on the creativity test was false, his or her self-esteem may have remained unaffected. Also, if participants had prior knowledge that the experimenter was timing them on the geometric line-tracing puzzle, they may have altered the length of time spent on the puzzle to either please the experimenter or to purposefully skew the data. Natural responses were crucial to the study. There were five outliers of people reaching the 30 minute mark which slightly skewed the data, but these outliers were not removed as persisting to the 30 minute mark was considered to be the natural response of the participant.

The following hypotheses were tested: 1) It was predicted that participants made to expend self-control would spend less time on a follow up measure of self-control than participants not made to expend self-control. 2) It was hypothesized that participants who received a self-esteem boost would last longer on a follow up measure of self-control than participants who received an ego threat. 3) It was predicted that there would be an interaction effect between self-control and self-esteem on time spent on the puzzle task, such that those in the self-control/ego-threat would show the worst performance (i.e., spend the least amount of time on the puzzle task), whereas those in the self-control/self-esteem boost condition would show performance similar to those who did not expend self-control. A 2 (self-control vs. no self-

control) x 2 (self-esteem boost vs. ego threat) ANOVA was used to analyze the data, with time spent on the follow up self-control task as the dependent variable. Alpha levels were set to .05, and power = .80 with $F(3, 219) = 3.369$.

CHAPTER 3

RESULTS

Results from the 2x2 ANOVA indicated that there was not a significant interaction between self-control/no self-control and self-esteem boost/ego-threat on time spent on the puzzle task, $F(3, 219) = .785, p = .503$. In addition, no main effects were found. For self-control versus no self-control, $F(1, 223) = .54, p = .46$. For self-esteem boost versus ego-threat, $F(1, 223) = .01, p = .91$.

Self-Control vs. Non-Self-Control

Although the results were not significant, in general, there was a trend in expenditure of self-control on the initial task and persistence times on the follow-up task. Participants not made to expend self-control spent slightly longer ($M = 545, SD = 415$) on the follow-up self-control task than participants who were made to expend self-control ($M = 507, SD = 365$) (See *Figure 1*)

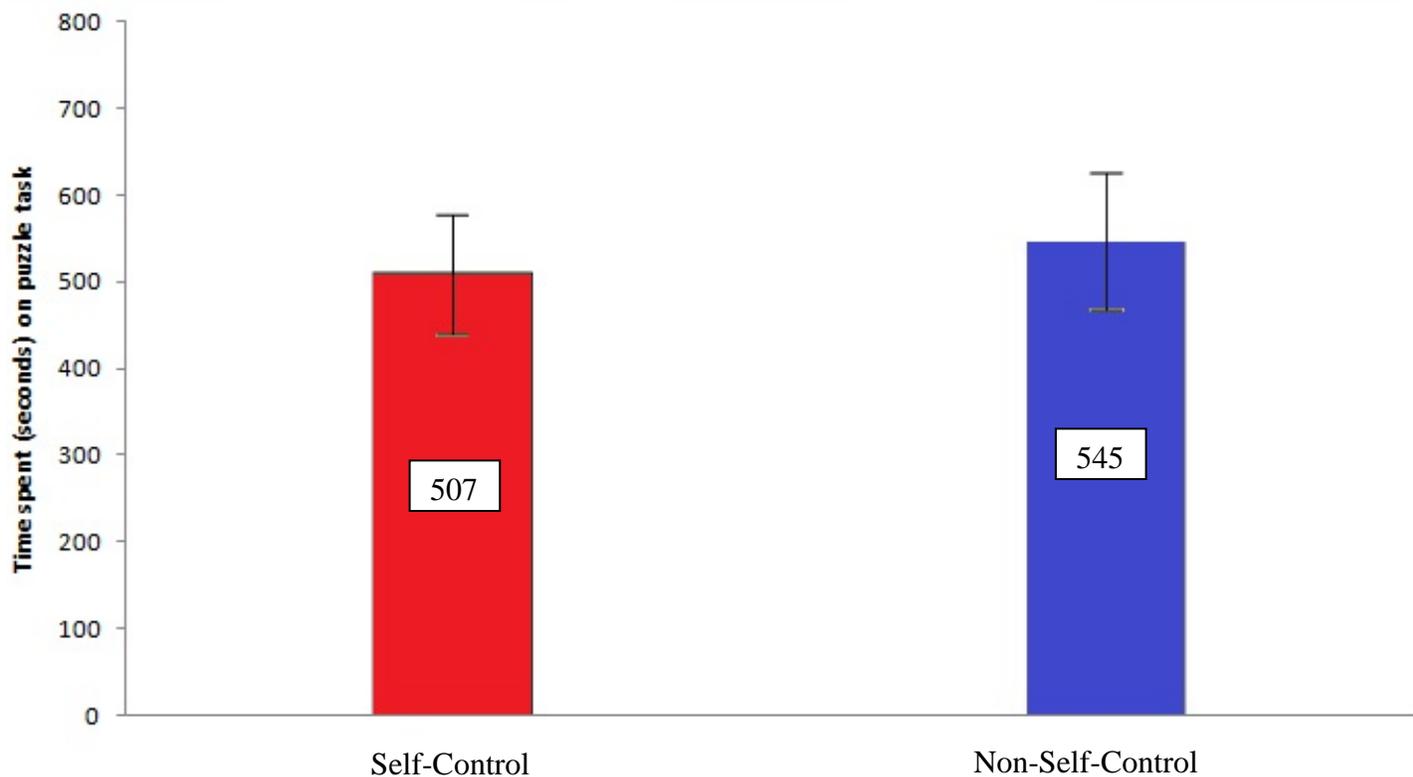


Figure 1: Effects of Self-Control Manipulation on Self-Control Ability

Note: $F(1, 223) = .54, p = .46$. Error bars: 95% CI

Ego Threat vs. Self-Esteem Boost

The effects of ego threats and self-esteem boosts on self-control ability were also found to be nonsignificant. There was, however, a trend that was found to be contrary to my hypotheses in that, regardless of which self-control group participants were in, participants who received an ego threat ($M = 528, SD = 388$) actually spent slightly more time trying to solve the unsolvable puzzles on the follow-up self-control task than participants who received a self-esteem boost ($M = 522, SD = 393$). This difference was not significant. (See *Figure 2*).

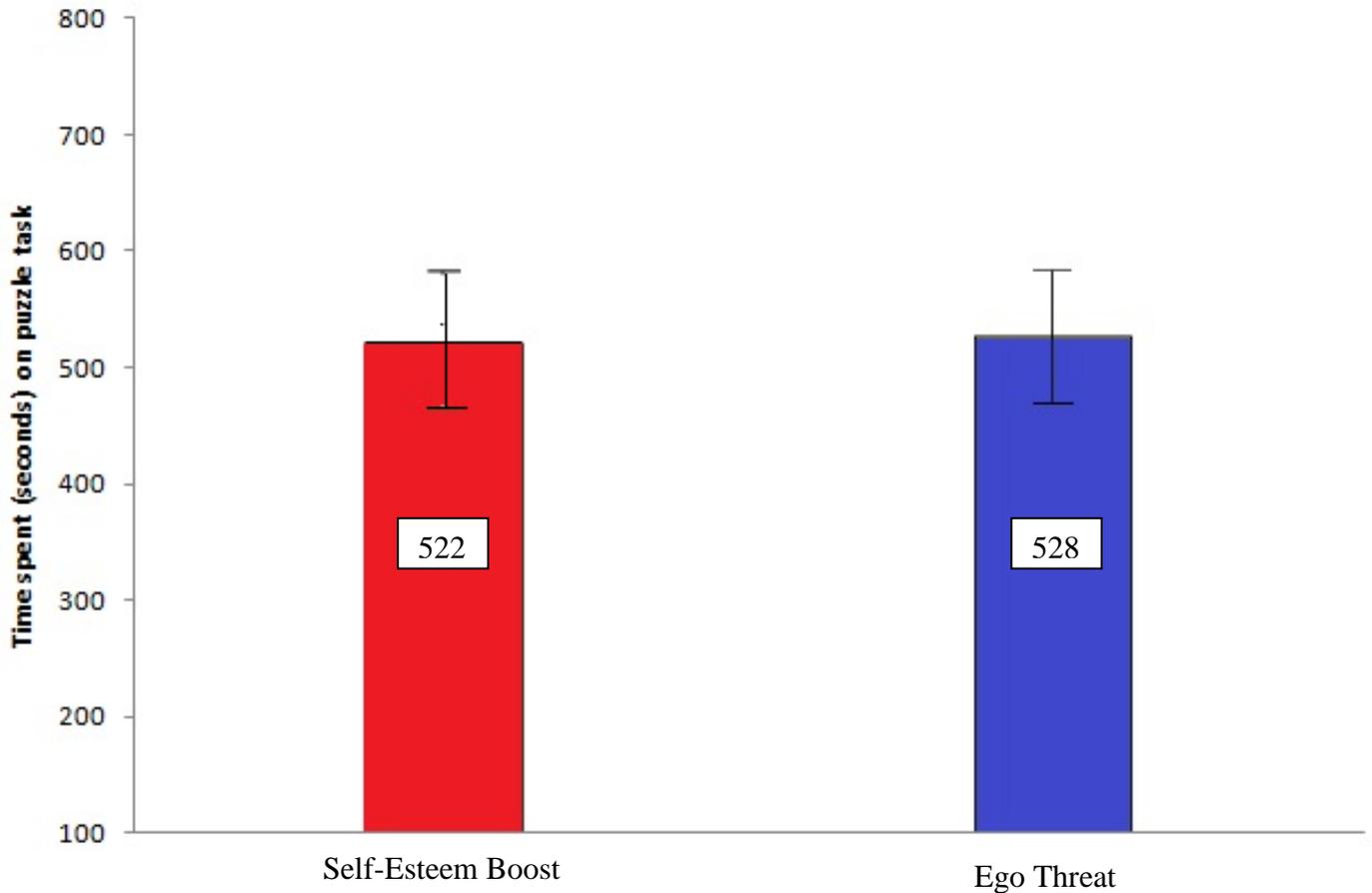


Figure 2: Effects of Self-Esteem Manipulation on Self-Control Ability

Note: $F(1, 223) = .01, p = .91$. Error bars: 95% CI.

SC-SEB vs. SC-ET

Because there were no significant main effects, an interaction was not observed. The descriptive results of SC-SEB, NSC-SEB, SC-ET, and NSC-ET were looked at, however. Participants who were made to expend self-control and who also received a self-esteem boost ($M = 487, SD = 361$) did not last as long on the follow-up self-control measure as participants made to expend self-control who received an ego threat ($M = 525, SD = 371$) (See Figure 3).

NSC-SEB vs. NSC-ET

Participants who were not made to expend self-control and who received a self-esteem boost ($M = 557, SD = 424$) lasted slightly longer than participants who were not made to expend

self-control who received an ego threat ($M = 532$, $SD = 409$) (See *Figure 3*). No follow-up tests were performed as there were no significant main effects or interaction effects.

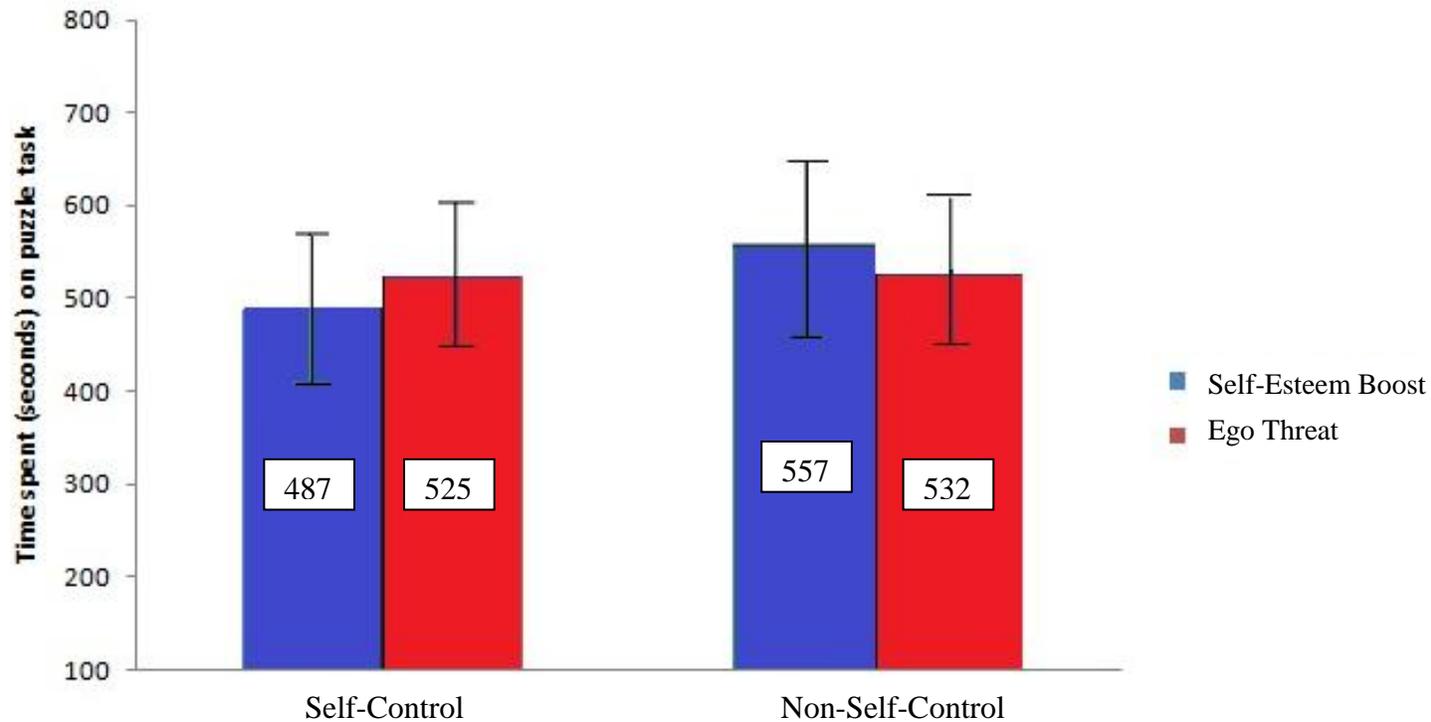


Figure 3: Interaction Between Self-Control and Self-Esteem Manipulations and Effects on Self-Control

Note: $F(3, 219) = .785$, $p = .503$. Error bars: 95% CI.

State Self-Esteem

A MANOVA was performed to assess the effects of the self-esteem manipulation on state self-esteem (measured using the HPSSSES). There was not a significant difference between the self-esteem boost and ego-threat conditions on total state self-esteem, $F(1, 221) = 0.95$, $p = .33$, although a nonsignificant trend was seen in that total state self-esteem was somewhat higher when self-esteem was boosted ($M = 76.96$, $SD = 10.03$) than when a participant's ego was threatened ($M = 74.95$, $SD = 11.15$). The effects of the self-esteem manipulation on performance

self-esteem and social self-esteem were nonsignificant, $F(1, 221) = 1.93, p = .17$ and $F(1, 221) = 1.43, p = .23$, respectively. The effects of the self-esteem manipulation on the HPSSSES appearance subscale, however, approached significance, $F(1, 221) = 2.75, p = .098$. The self-esteem boost resulted in a trend of higher appearance self-esteem ($M = 21.45, SD = 2.67$) than the ego threat manipulation ($M = 20.72, SD = 3.23$). No explicit hypotheses had been made concerning appearance state self-esteem, only about state self-esteem in general.

CHAPTER 4

DISCUSSION

The goal of the current study was to assess the ego-depletion effect and the possibility that a self-esteem boost could counteract the ego-depletion effect. Three hypotheses were tested. 1) Participants who do not have to expend self-control will persist longer on a follow up measure of self-control than participants who do have to expend self-control. 2) Participants who receive a self-esteem boost will persist longer on a self-control measure than participants who receive an ego threat. 3) There would be an interaction effect between self-control and self-esteem on time spent on the puzzle task. It was predicted that those in the self-control/ego-threat would show the worst performance (i.e., spend the least amount of time on the puzzle task), whereas those in the non-self-control/self-esteem boost condition would show performance similar to those in the group that did not expend self-control. All results were nonsignificant.

Self-Control Expenditure

The hypothesis that those who did not have to expend self-control (regardless of self-esteem manipulation) would persist longer on a follow-up measure of self-control than those who did have to expend self-control was not met. In general, participants who did not expend self-control persisted slightly longer on a follow-up measure of self-control than participants who expended self-control (regardless of self-esteem manipulation), but there was no significant difference between the two groups. Past results in previous studies examining the ego-depletion effect were not replicated in this study in that self-control ability did not at all diminish following initial expenditure of self-control during a previous self-control task. In past studies, the ego-depletion effect significantly affected participants' performance on subsequent tasks involving self-control.

The lack of significant results could be an issue of the possible time sensitivity of the ego-depletion effect. The first task of the creativity test lasted 3 minutes, as did the second task. Experimenters spent 3 minutes ‘scoring’ the test. Delivery of instructions and feedback varied in time among experimenters (if the participants had questions). Participants then completed the state self-esteem scale as a manipulation check. The amount of time that passed between the white bear task and the follow-up measure of self-control therefore may have varied between 12 and 15 minutes. Participants made to expend self-control may not have fully experienced the ego-depletion effect because of the amount of time between the two self-control tasks. Perhaps enough time had lapsed for participants to recuperate from the ego-depletion effect. Because there were no significant effects pointing to the occurrence of the ego-depletion effect in this study though the construct has been observed and supported in many past studies by Baumeister et al. (1993, 1998, 2006), it may be an indication that one can recuperate from a depleted ego within 12 – 15 minutes after expending self-control. For instance, Tyler and Burns (2008) found that after 10 minutes, depleted participants’ performance on a subsequent self-control task was equal to performance of the nondepleted participants. As the Tyler and Burns study is the only study to date to investigate how long the ego-depletion may last, a consensus has not yet been reached on the length of time for which the ego-depletion effect can last. Thus, the results of the current study may inform future studies examining the ego-depletion effect that the time lapse between two self-control tasks should not approach 15 minutes because the ego-depletion effect does not persist longer than 15 minutes.

Self-Esteem

The second hypothesis that a boost in self-esteem would cause participants to persist longer on the follow-up self-control task than participants who received a threat to their self-

esteem was not met. Participants who received an ego threat actually persisted longer on a follow-up measure of self-control than participants who received a self-esteem boost, though this difference was nonsignificant.

One possible explanation for why some individuals who received a threat to self-esteem might persist longer on a follow-up measure of self-control than participants who received a self-esteem boost could be that some participants with threatened self-esteem may experience similar compensatory social behaviors to those shown by rejected participants in a study by Maner, Miller, Schmidt, and Eckel (2010). Maner et al. found that participants high in rejection sensitivity who were socially rejected exhibited an increase in progesterone, a hormone that has been shown to have a strong link to social affiliative behaviors (an increase results in more sociability, whereas a decrease results in less sociable behavior). These rejection-sensitive participants engaged in compensatory social behaviors when they perceived that they were rejected, such as choosing to work with groups of people (when given the choice not to) after being rejected. This may be linked to the desire to socially redeem oneself by seizing opportunities to work with other people upon being rejected.

Perhaps a threat to self-esteem via a creativity test has a similar negative effect of being rejected. When rejected or ostracized, individuals sometimes feel humiliated or embarrassed (Leary, Koch, & Hechenbleikner, 2001). This embarrassment could possibly be the reason for which rejected individuals attempt to compensate socially. It seems intuitive that personally being delivered news of failure on a task might cause feelings of embarrassment. Although the opportunity to redeem oneself socially with a new group is not present in the current study, participants may have been attempting to salvage the current social situation to overcome embarrassment by seeking redemption from the experimenter. Unfortunately, mood state

following the self-esteem boost or ego-threat manipulation was not assessed in the current study so it is not certain that participants experienced self-conscious emotions such as humiliation or embarrassment following ego-threat.

Another possible reason for nonsignificant differences among the self-esteem boost and ego threat conditions may be due to the method of manipulation itself. Results of a creativity test may not be important to an individual's self-esteem. That is, participants' self-esteem was not contingent on their creativity or on their performance on a creativity test. In a meta-analysis of 20 years of terror management theory research, Burke, Martens, and Faucher (2010) reported that 59.9% of terror-management experiments evaluate the effect of individual differences, such as self-esteem, on mortality salience. One problem that often occurs in studies manipulating self-esteem is that they include domain-irrelevant moderators (Burke et al.). That is, often when researchers attempt to manipulate self-esteem, they choose things that peoples' self-esteem are not necessarily contingent upon. They then attempt to measure the effect by seeing how individuals perform on a follow-up task. The current study may have faced a similar problem of an irrelevant self-esteem manipulation. It may be likely that people do not feel very threatened when told that they are not creative; therefore, a creativity test may not be self-esteem relevant and would therefore lack the ability to significantly boost or lower self-esteem. In fact, the current study found no significant differences in state self-esteem between those in the self-esteem boost and those in the ego-threat conditions. For a sample of college students, intelligence or social relationships may be more relevant to self-esteem, and future research should focus on these areas when attempting to manipulate self-esteem.

Interaction Between Self-Control and Self-Esteem

The third hypothesis that self-control would interact with self-esteem was also not met. Although participants who did not have to expend self-control and who received a self-esteem boost persisted slightly longer than fellow participants who did not expend self-control and who received an ego threat, this was not the case for participants in the self-control condition. In fact, ego-depleted participants who received a threat to their self-esteem persisted slightly (though not significantly) longer than participants who received a self-esteem boost when attempting to solve the follow-up puzzles.

A possible explanation for why ego-depleted self-esteem boost participants did not persist as long as ego-depleted participants who received a threat to their self-esteem may be further evidence that embarrassment plays a role in persistence at tasks requiring self-control when another individual is involved. If individuals with threatened self-esteem engaged in compensatory behaviors (possibly due to embarrassment), perhaps those with boosted self-esteem did not feel the need to ‘prove’ themselves after receiving a self-esteem boost. Those who received a boost may have been resting on their laurels, so to speak. Participants who received a self-esteem boost were told that they received the highest score the researcher had seen on the creativity test. These participants were already aware that the experimenter thought they were above average. This could have made participants feel secure in choosing not to persist very long when faced with a difficult yet arbitrary task. This idea is purely conjecture and future research would need to explore the possibility of embarrassment playing a role in social compensatory behaviors upon receiving a threat to self-esteem.

Future Research

More self-esteem relevant manipulations (e.g., an intelligence test rather than a creativity test) may provide significant results in affecting self-esteem. Perhaps if a study similar to this is done in the future, false feedback on a test such as an intelligence test (Vohs & Heatherton, 2001) might have a more significant effect on participants' self-esteem, especially among college students. It seems intuitive that being viewed as intelligent would be more valued among the general college student population than being viewed as creative. There are several academic fields in which creativity is not as necessary to excel as is intelligence. Perhaps using an existing intelligence measure and providing false feedback would seem more credible than a self-esteem manipulation relying on a creative ability. Intelligence tests are more likely to be taken seriously and may be more salient than a creativity test.

Making the self-esteem threat more personal may also yield significant results as analyses revealed that the appearance subscale of the state self-esteem measure was the only subscale that came close to reaching significance. Perhaps a manipulation involving appearance would have more of an effect on self-esteem. For example, pictures of participants and/or confederates could be distributed and participants could be instructed to rate the appearance of their fellow participants. They could also be told that their fellow participants are rating their appearance as well. Participants in the ego threat condition could be given false feedback stating that many or all of their fellow participants gave them a low score for appearance. Participants in the self-esteem boost condition could be given false feedback indicating that their fellow participants rated their appearance very highly.

A study performed by Faunce (1984) examined the methods students use to socially rate other students, and outlined seven categories used: 1) positive or negative statements about

personal character (e.g., ‘friendly’ or ‘overbearing’), 2) physical appearance or dress (‘good looking’ or ‘sloppy’), 3) intelligence and academic performance (‘smart’ or ‘poor grades’), 4) school activities and athletics, 5) social relations (‘dates popular athlete’ or ‘hangs with the wrong crowd’), 6) personal morality, and 7) family wealth or social status. These seven categories were stated to be used by students when socially placing or displacing their classmates, hence these are categories that help determine whether a person should be accepted or rejected socially. Negative or positive feedback involving a participant's rating in one of these categories could have a significant effect in lowering or boosting self-esteem. Confederates or ‘pretend’ participants could be used to provide a ‘score’ for participants in some of these categories (e.g., physical appearance or dress).

If a study similar to this is conducted in the future, the self-esteem manipulation should be cut in length of time if one wants to examine the effects of self-esteem on self-control. Knowing exactly how long the ego-depletion effect lasts (in order to time the self-esteem manipulation accordingly) may provide results more indicative of the nature of the relationship between self-esteem and self-control. Perhaps future research involving the effects of self-esteem on self-control should also examine levels of embarrassment following the self-esteem manipulation to determine whether individuals who report feeling ashamed or embarrassed are more likely to engage in compensatory behaviors upon receiving negative, self-esteem threatening feedback than participants who do not report feeling ashamed or embarrassed. Examining rejection sensitivity may also be beneficial when assessing persistence upon receiving a threat to self-esteem.

Conclusions

Though boosting self-esteem was not found to have a significant impact on self-control in this study, the results are not conclusive. Problems with methodology (i.e., time spent between self-control tasks and a self-relevant self-esteem manipulation that was not relevant) could be the cause of the nonsignificant results of this study, which could be addressed and overcome in future research. Self-esteem has been related to both positive and negative behavioral outcomes and thus warrants further research into how to foster stable, healthy self-esteem. Self-control is necessary to optimally coexist with other humans and attain goals that lead to enriching humans' lives. Lapses in self-control can result in many undesired and harmful behaviors such as addiction, eating disorders, and self-harm. Finding a link between self-control and self-esteem may better enable future research to find ways of promoting healthy self-esteem in order to give individuals the internal strength required to expend self-control.

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APPENDICES

Appendix A: Consent Form

CONSENT FORM

This consent form will explain what you can expect as a participant in this study. It is important that you read this material carefully before deciding to participate in this study.

Purpose of the Research: The purpose of this research is to compare performance on self-relevant and non-self-relevant cognitive tasks.

Duration of the Study: This study will last no longer than 45 minutes, and you will receive 2 research credits for participation.

Procedures of the Research: Students currently enrolled in undergraduate psychology courses at ETSU will be recruited for participation in this study through Sona. After you have read and signed the consent form, you will be asked to engage in several tasks assessing different cognitive abilities, some of which are self-relevant and some of which are not. The study will last no longer than 45 minutes.

Alternative Procedures/Treatments: None.

Potential Risks & Discomforts: There are minimal risks and discomforts associated with this study. If any discomfort arises, however, someone will be made available to speak with you at your request.

Potential Benefits: You understand that involvement in this study is not likely to produce any direct, immediate benefit to you other than research credit for your time spent in the study. You will receive 2 research credits for participation in this study.

Voluntary Participation: Participation in this study is voluntary, and you are free to withdraw consent and discontinue participation at any time without prejudice, penalty, or loss of the benefits to which you might otherwise be entitled. If you choose to withdraw consent at any time, you will receive research credit for the time spent in the study.

Contact for Questions: If you have any questions about the experiment, research-related problems, or would like to discuss any aspect of the experiment at any time in the future, you

may contact Dr. Ginni Blackhart (principal investigator) at 423-439-4613 or at blackhar@etsu.edu. You may also contact the Chairman of the Institutional Review Board at 423-439-6054 for any questions you may have about your rights as a research participant. If you have any questions or concerns about the research and want to talk to someone independent of the research team or you cannot reach the study staff, you may call an IRB Coordinator at 423-439-6055 or 423-439-6002.

Confidentiality: All information gathered in this research will be kept confidential and secure to the extent allowed by the law. Participant data will be coded with a participant number, and no names or other personal information will be identified or related to that number or with the materials collected from participants in any way. A copy of the data collected for this study will be stored in safe, locked location on ETSU's campus in the Department of Psychology for at least 10 years after the end of this research. The results of this study may be published and/or presented at meetings *without* naming you as a participant. Although your rights and privacy will be maintained, the Secretary of the Department of Health and Human Services, the ETSU IRB, and personnel particular to this research have access to the study data. Your records will be kept completely confidential according to current legal requirements, and will not be revealed unless required by law, or as noted above.

By signing below, you confirm that you have carefully read this document or had this document read to you, and that you have been given the opportunity to ask any questions you may have concerning the study and the conditions of participation, and that these questions, if any, have been answered to your satisfaction. You will be given a signed copy of this informed consent document.

I, being at least 18 years of age, freely and voluntarily consent to be a participant in the above named research project, and have read and understand the above.

Signature of Participant

Date

Printed Name of Participant

Signature of Experimenter

Date

Appendix B: Rosenberg Self-Esteem Scale

The scale is a 10 item Likert scale with items answered on a four point scale - from strongly agree to strongly disagree. The original sample for which the scale was developed consisted of 5,024 High School Juniors and Seniors from 10 randomly selected schools in New York State.

Instructions: Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, circle SA. If you agree with the statement, circle A. If you disagree, circle D. If you strongly disagree, circle SD.

1. On the whole, I am satisfied with myself. SA A D SD
- 2.* At times, I think I am no good at all. SA A D SD
3. I feel that I have a number of good qualities. SA A D SD
4. I am able to do things as well as most other people. SA A D SD
- 5.* I feel I do not have much to be proud of. SA A D SD
- 6.* I certainly feel useless at times. SA A D SD
7. I feel that I'm a person of worth, at least on an equal plane with others.
SA A D SD
- 8.* I wish I could have more respect for myself. SA A D SD
- 9.* All in all, I am inclined to feel that I am a failure. SA A D SD
10. I take a positive attitude toward myself. SA A D SD

Scoring: SA=3, A=2, D=1, SD=0. Items with an asterisk are reverse scored, that is, SA=0, A=1, D=2, SD=3. Sum the scores for the 10 items. The higher the score, the higher the self esteem.

Appendix C: General Self-Efficacy Scale

General Self-Efficacy Scale

1	I can always manage to solve difficult problems if I try hard enough.
2	If someone opposes me, I can find the means and ways to get what I want.
3	It is easy for me to stick to my aims and accomplish my goals.
4	I am confident that I could deal efficiently with unexpected events.
5	Thanks to my resourcefulness, I know how to handle unforeseen situations.
6	I can solve most problems if I invest the necessary effort.
7	I can remain calm when facing difficulties because I can rely on my coping abilities.
8	When I am confronted with a problem, I can usually find several solutions.
9	If I am in trouble, I can usually think of a solution.
10	I can usually handle whatever comes my way.

Response Format

1 = Not at all true 2 = Hardly true 3 = Moderately true 4 = Exactly true

No items are reverse-scored. The higher the score, the higher the self-efficacy.

Appendix D: New General Self-Efficacy Scale

1. I will be able to achieve most of the goals that I have set for myself.
2. When facing difficult tasks, I am certain that I will accomplish them.
3. In general, I think that I can obtain outcomes that are important to me.
4. I believe I can succeed at most any endeavor to which I set my mind.
5. I will be able to successfully overcome many challenges.
6. I am confident that I can perform effectively on many different tasks.
7. Compared to other people, I can do most tasks very well.
8. Even when things are tough, I can perform quite well.

5-point Likert-type scale from *strongly disagree* (1) to *strongly agree* (5)

No items are reverse-scored. The higher the score, the higher self-efficacy is reported to be.

Appendix E: Self-Control Scale – Brief Version

- | | Not at all | Very much | Very Much |
|-----|--|-----------|-----------|
| | 1 | 2 | 3 |
| | 4 | 5 | |
| | 1——2——3——4——5 | | |
| (R) | 2. I have a hard time breaking bad habits. 1——2——3——4——5 | | |
| (R) | 3. I am lazy. 1——2——3——4——5 | | |
| (R) | 4. I say inappropriate things. 1——2——3——4——5 | | |
| (R) | 5. I do certain things that are bad for me, if they are fun. 1——2——3——4——5 | | |
| | 6. I refuse things that are bad for me. 1——2——3——4——5 | | |
| | 7. I wish I had more self-discipline. 1——2——3——4——5 | | |
| | 8. People would say that I have iron self- discipline. 1——2——3——4——5 | | |
| | 9. Pleasure and fun sometimes keep me from getting work done. 1——2——3——4——5 | | |
| (R) | 10. I have trouble concentrating. 1——2——3——4——5 | | |
| | 11. I am able to work effectively toward long-term goals. 1——2——3——4——5 | | |
| (R) | 12. Sometimes I can't stop myself from doing something, even if I know it is wrong.
1——2——3——4——5 | | |
| (R) | 13. I often act without thinking through all the alternatives. 1——2——3——4——5 | | |

(R) Indicates reverse-scored items. The higher the score, the higher the level of self-control.

Appendix F: Self-Esteem Boost Manipulation

Creativity Test

How creative are you? The Creativity Test enables you to discover your creative potential in both your personal and professional life.

This test includes 2 questions: The first question asks you to list alternative uses of an item; the second question asks you to list the problems created in an imagined situation. For each question, you will have 3 minutes to answer.

For example: "Please list the alternative use of a book: "straight edge/ruler."

Question 1: Please list as many alternative uses for a brick as you could. Work as hard as you can for three minutes.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

Question 2: JUST SUPPOSE you could walk on air or fly without being in an airplane or similar vehicle. What problems might this create? List as many as you can think of in 3 minutes.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

Appendix G: Ego-Threat Manipulation

Creativity Test

How creative are you? The Creativity Test enables you to discover your creative potential in both your personal and professional life.

This test includes 2 questions: The first question asks you to list alternative uses of an item; the second question asks you to list the problems created in an imagined situation. For each question, you will have 3 minutes to answer.

For example: "Please list the alternative use of a book: "straight edge/ruler."

Question 1: Please list as many alternative uses for a doughnut as you could. Work as hard as you can for 3 minutes.

- | | |
|-----|-----|
| 1. | 16. |
| 2. | 17. |
| 3. | 18. |
| 4. | 19. |
| 5. | 20. |
| 6. | 21. |
| 7. | 22. |
| 8. | 23. |
| 9. | 24. |
| 10. | 25. |
| 11. | 26. |
| 12. | 27. |
| 13. | 28. |
| 14. | 29. |
| 15. | 30. |

Question 2: JUST SUPPOSE you could walk on air or fly without being in an airplane or similar vehicle. What problems might this create? List as many as you can think of in 3 minutes.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.
- 13.
- 14.
- 15.
- 16.
- 17.
- 18.
- 19.
- 20.
- 21.
- 23.
- 24.
- 25.
- 26.
- 27.
- 28.
- 29.
- 30.

Appendix H: Feedback Form for Creativity Tests

The Feedback Form of the Creativity Test

Your raw score is _____ on a 50 point scale, Percentile _____

Creativity Test Norm

Highly creative people see things differently; their perspective on problems is different from that of most other people. It's different precisely because creative individuals have the ability to imaginatively examine the world and put it back together in new ways. It's this different way of looking at problems that distinguishes the highly creative person from others.

People who get a high score on the creativity test tend to have a bright future in creative endeavors.

People who get a low score on creativity test tend to have a deficiency in creative realms.

Reference group: Undergraduate students. Age ranges from 17 to 25.

Mean = 24.73. Standard Deviation = 7.69%

1	0.1%
2	1%
3	2%
4	4%
5	6%
6	9%
7	10%
8	13%
9	15%
10	17%
11	19%
12	21%
13	23%
14	25%
15	27%
16	29%
17	31%
18	33%
19	35%
20	37%
21	40%
22	42%
23	44%
24	48%

25	52%
26	54%
27	58%
28	61%
29	64%
30	66%
31	69%
32	71%
33	74%
34	77%
35	80%
36	83%
37	85%
38	87%
39	89%
40	90%
41	91%
42	92%
43	93%
44	94%
45	95%
46	96%
47	97%
48	98%
49	99%
50	99.99%

Appendix I: Heatherton and Polivy State Self-Esteem Scale

This is a questionnaire designed to measure what you are thinking at this moment. There is, of course, no right answer for any statement. The best answer is what you feel is true of yourself at this moment. Be sure to answer all of the items, even if you are not certain of the best answer. Again, answer these questions as they are true for you RIGHT NOW.

Using the following scale, place a number in the box to the right of the statement that indicates what is true for you at this moment:

- 1 = not at all
- 2 = a little bit
- 3 = somewhat
- 4 = very much
- 5 = extremely

1. I feel confident about my abilities. P
- 2.* I am worried about whether I am regarded as a success or failure. S
3. I feel satisfied with the way my body looks right now. A
- 4.* I feel frustrated or rattled about my performance. P
- 5.* I feel that I am having trouble understanding things that I read. P
6. I feel that others respect and admire me. A
- 7.* I am dissatisfied with my weight. A
- 8.* I feel self-conscious. S
9. I feel as smart as others. P
- 10.* I feel displeased with myself. S
11. I feel good about myself. A
12. I am pleased with my appearance right now. A
- 13.* I am worried about what other people think of me. S
14. I feel confident that I understand things. P

- 15.* I feel inferior to others at this moment. S
- 16.* I feel unattractive. A
- 17.* I feel concerned about the impression I am making. S
- 18.* I feel that I have less scholastic ability right now than others. P
- 19.* I feel like I'm not doing well. P
- 20.* I am worried about looking foolish. S

Note: The statements with an asterisk are reversed-keyed items

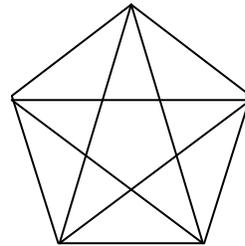
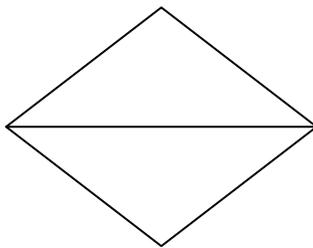
The letter in the last column indicates the primary factor on which that item loaded in a factor analysis. The three factors were labeled performance self-esteem (P), social self-esteem (S) and appearance self-esteem (A).

Appendix J: Problem Solving Task

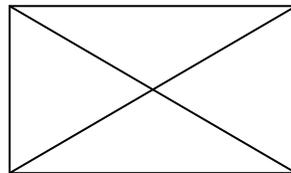
Problem-Solving Task

Directions: For each of the shapes below, you are to trace over each line without lifting your pencil, and without retracing any line (i.e., you may trace over each line only once).

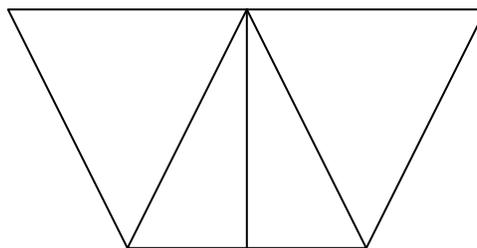
Sample puzzles:



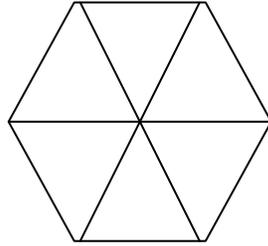
Puzzle #1:



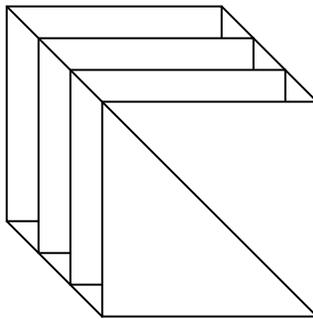
Puzzle #2:



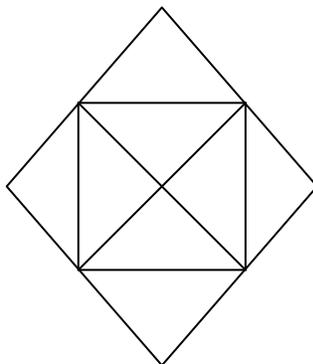
Puzzle #3:



Puzzle #4:



Puzzle #5:



Appendix K: Demographics Questionnaire

Demographics

Please answer the following questions.

**Gender:*

Female

Male

**Race:*

Choose only one of the following

White / Caucasian

Black or African-American

Native American or Alaska Native

Asian

Native Hawaiian or Pacific Islander

Other

**Ethnicity:*

Choose only one of the following

Hispanic / Latino

Not Hispanic / Latino

**Primary language spoken in home?*

Appendix L: Manipulation Check

**In your own words, what was the present study about?*

**Did you believe, at any time, that the experiment dealt with anything other than what the experimenter had described to you?*

Yes

No

**If yes, what?*

**Did this affect your behavior in any way?*

Yes

No

**If yes, how?*

**Did you feel that certain reactions were expected from you at any time?*

Yes

No

**If yes, what?*

**Did you have any prior information about this study prior to participating?*

Yes

No

Appendix M: Debriefing

Debriefing

Thank you for participating in this experiment. This sheet will give some explanation as to what we are studying in this experiment. **Please do not share this with others as they may participate in this experiment in the future.**

At the beginning of the study, you were told that we are interested in assessing and comparing people's performance and ability on self-relevant and non-self-relevant cognitive tasks. In fact, we are actually interested in self-control. In the first task, a cognitive thought listing task, some participants were asked to suppress thoughts of a white bear, and to record instances when they thought of a white bear during the task. Other participants were not given these instructions. Then participants either engaged in a task designed to boost or threaten self-esteem (the creativity test). Some participants were told that they did very well on the creativity test, whereas others were told they did poorly on the creativity test. This feedback was not true, and was meant to either boost or threaten your self-esteem. Finally, all participants completed a problem-solving task where they were asked to solve geometric line tracing puzzles. In fact, these puzzles were unsolvable, and we are interested in how long participants persist in attempting to solve these puzzles. We are predicting that those who engage in the thought-suppression task will not persist as long on the problem-solving task as those not asked to suppress thoughts of a white bear, but also predict that those who received a boost to self-esteem between tasks will persist longer on the problem-solving task than those whose self-esteem was threatened.

I want to apologize for being misleading, and thank you for your participation in this experiment. If you have any questions regarding this experiment after you leave the lab, please E-mail Dr. Ginni Blackhart at blackhar@etsu.edu. And, again, **please remember not to share this explanation of the study with others as they may also participate in this experiment in the future.** Thank you.

You have the option of withdrawing your data from this study. Please choose the appropriate option below:

_____ I do not wish to have my data withdrawn from this research (i.e., your data will be kept)

_____ I do wish to have my data withdrawn from this research (i.e., your data will be discarded)

VITA

JESSICA R. WILLIAMSON

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