

MAINTAINING SELF-INTEGRITY THROUGH SUPERSTITIOUS BEHAVIOR

by

Ryan M. Moyer

A Dissertation Submitted to the Faculty of

The Charles E. Schmidt College of Science

in Partial Fulfillment of the Requirements for the Degree of

Doctor of Philosophy

Florida Atlantic University

Boca Raton, Florida

August 2010

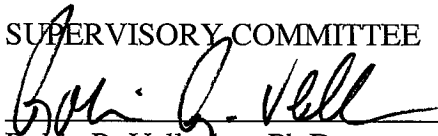
MAINTAINING SELF-INTEGRITY THROUGH SUPERSTITIOUS BEHAVIOR

by

Ryan M. Moyer

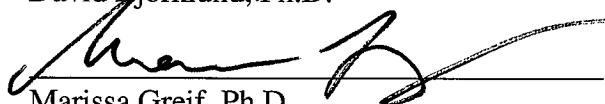
This dissertation was prepared under the direction of the candidate's dissertation advisor, Dr. Robin R. Vallacher, Department of Psychology, and has been approved by the members of his supervisory committee. It was submitted to the faculty of the Charles E. Schmidt College of Science and was accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

SUPERVISORY COMMITTEE


Robin R. Vallacher, Ph.D.

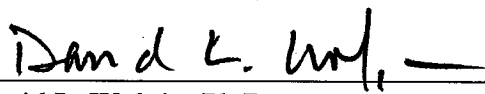
Dissertation Advisor

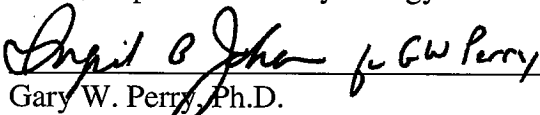

David Bjorklund, Ph.D.

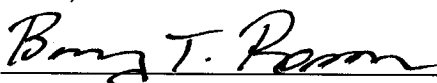

Marissa Greif, Ph.D.


Andrzej Nowak, Ph.D.


John D. Morris, Ph.D.


David L. Wolgin, Ph.D.
Chair, Department of Psychology


Gary W. Perry, Ph.D.
Dean, The Charles E. Schmidt College of Science


Barry T. Rosson, Ph.D.
Dean, Graduate College


Date

ABSTRACT

Author: Ryan M. Moyer
Title: Maintaining Self-Integrity Through Superstitious Behavior
Institution: Florida Atlantic University
Dissertation Advisor: Dr. Robin R. Vallacher
Degree: Doctor of Philosophy
Year: 2010

Superstitious behavior is still a common occurrence in modern society, seemingly impervious to intellectual progress that humans have made throughout history. While the desire to maintain a sense of control over one's environment has been investigated as one of the key motivations behind superstitious behavior, it has yet to be examined within the context of the self-concept. Threats to one's sense of control can also be construed as general threats to one's global sense of self-worth. Consequently, while superstitious behavior may be triggered by control threats, it may also occur as a result of *any* general threat to self-integrity. Moreover, if superstitious behavior is motivated by the desire to maintain overall self-integrity, then depriving individuals of a chance to engage in superstitious behavior should elicit subsequent attempts to repair self-integrity via alternative means.

Three studies were conducted in order to establish this link between self functioning and superstitious behavior. Studies 1a and 1b did not find any evidence that

manipulating the self-concept prior to an event designed to evoke superstition would increase the desire to engage in superstitious behavior. Threatening (or boosting) one's self-esteem prior to a game of chance did not affect participant's desire to use a superstitious strategy (aura color). Study 2 provided evidence that superstitious behavior is motivated by a desire to maintain self-integrity by showing that individuals deprived of their aura color prior to a game of chance were more likely to engage in self-affirmation subsequently. It also showed that the impact of depriving individuals of a superstitious strategy is independent of belief in such strategy. Study 2, however, did not find evidence that chronic self-esteem, self-esteem stability, or an individual's desire for control moderated this effect. Possible reasons for this lack of support for our hypotheses are discussed.

DEDICATION

This manuscript is dedicated to my mother, for inspiring and motivating me to be the person I am today.

MAINTAINING SELF-INTEGRITY THROUGH SUPERSTITIOUS BEHAVIOR

List of Tables	vii
List of Figures	viii
Introduction.....	1
Superstitious Thinking & Behavior	2
The Superstitious Situation	4
Self-Esteem Maintenance	6
Self-Esteem & Control.....	8
Current Research.....	11
Study 1a	14
Method	15
Participants.....	15
Material	15
Procedure	16
Results.....	18
Discussion.....	18
Study 1b	19
Method	20
Participants.....	20
Material	20

Procedure	20
Results.....	21
Discussion.....	22
Study 2	23
Method	25
Participants.....	25
Materials	25
Procedure	27
Results.....	28
Discussion.....	32
General Discussion	35
References.....	42
Appendices.....	59

LIST OF TABLES

Table 1:	Means & Standard Deviations of Desirability of Aura Color Across Self-Resource Conditions	51
Table 2:	Means & Standard Deviations of Self-Affirmation Index Scores for Aura Conditions and Predicted Moderator Variables	52

LIST OF FIGURES

Figure 1:	Mean Desirability of Aura Rating Across Self Resource Groups (Study 1a).....	53
Figure 2:	Mean Desirability of Aura Rating Across Self Resource Groups (Study 1b).....	54
Figure 3:	Mean Self-Affirmation Index Scores for Aura Groups.....	55
Figure 4:	Mean Self-Affirmation Index Scores for SE X Resource-Focus Interaction	56
Figure 5:	Mean Self-Affirmation Index Scores for SE Stability Groups	57
Figure 6:	Mean Self-Affirmation Index Scores for DOC Groups	58

INTRODUCTION

Despite the extraordinary capacity for humans to engage in rational thought, superstitious behavior is still prevalent in modern society. Large numbers of people still engage in a variety of superstitious behaviors and rituals, such as knocking on wood or crossing fingers for good luck (Keinan, 2002; Newport & Strausberg, 2001). In the search to find an explanation for the enduring nature of superstitious behavior, psychologists have only identified a handful of factors that adequately explain why such an obvious form of irrational behavior still exists today.

Leading explanations for the function of superstitious behavior focus on an individual's need to maintain a sense of control over their environment (Case, Fitness, Cairns, & Stevenson, 2004; Friedland, Keinan, & Regev, 1992; Keinan, 2002; Malinowski, 1954). However, none of this research has attempted to investigate this control motivation within the context of the self-concept. Specifically, maintaining a sense of personal control over one's environment is strongly tied to self-esteem (Bandura, 1977; Heider, 1958). This paper seeks to reframe the goal of superstition as a desire to maintain one's overall sense of self-integrity or self-worth, rather than to simply regain a sense of personal control.

Superstitious Thinking & Behavior

Attempts to uncover the factors related to superstitious behavior have yielded a wide variety of findings. Research linking superstitious behavior to cognitive factors has found mixed results. Negative correlations have been found between superstitious thinking and intelligence (Kileen, Wildman, and Wildman, 1974; Alcock & Otis, 1980) and several other studies have established a negative relationship between education-level and paranormal beliefs, a similar manifestation of magical thinking (Za'rour, 1972; Blum & Blum, 1976; Otis & Alcock, 1982; Orenstein, 2002; Aarnio & Lindeman, 2005). Despite this trend towards a negative relationship, other studies have found no relationship between superstitious thinking and cognitive factors (Blackmore, 1997; Wolfradt, Oubaid, Straube, Bischoff, & Mischo, 1999). Subsequently, research began to focus on thinking *style*, rather than overall intelligence or critical thinking ability. It was found that superstitious behavior is associated with a preference for intuitive thinking, as opposed to rational thinking (Epstein, Pacini, Denes-Raj, & Heier, 1996; Wolfradt, et al., 1999; Aarnio & Lindeman, 2005).

This distinction between intuitive and rational thinking is grounded in a foundation of research examining the dual-process nature of social cognition (Evans, 2003; Pacini & Epstein, 1999; Sloman, 1996; Stanovich & West, 2000). According to dual-process theories, individuals have two distinct modes of processing and interpreting social information: the rational system, which is responsible for logical and deliberate action and thought, and the experiential system, which is responsible for more intuitive and affect-based responses. While the rational system makes logical connections based on knowledge and facts, the experiential system makes associative connections, based on

experiences. Superstitious behavior is thought to be a product of the intuitive system (Epstein et al., 1996; Lindeman & Aarnio, 2006). This perspective suggests that while the rational system may inform individuals of the implausibility of a causal link between superstitious behavior and positive outcomes, the intuitive system, based strongly on experience and emotion, may still produce a gut feeling motivating individuals to proceed with such behaviors. Additionally, it also suggests that superstitious behavior may not necessarily be a result of cognitive faults, but rather affective needs.

Support for this interpretation can be found in evidence demonstrating that individuals will engage in superstitious behavior without actually endorsing belief in the effectiveness of such behaviors (Bleak & Frederick, 1998; Case et al., 2004; Ciborowski, 1997; Felson & Gmelch, 1979). Ciborowski (1997), for example, found that baseball players did not perceive a causal link between their batting rituals and their performance. Additionally, Epstein (1999) reported that bingo players who keep lucky charms with them will often admit that they do not actually believe they work, however, they still feel a compulsion to have these objects at their side. In other words, having these lucky charms or rituals makes individuals *feel* better, regardless of how rational their behavior is interpreted. Consistent with this notion, many researchers have suggested that athletes use superstitions to reduce anxiety and build confidence (Neil, 1980; Womack, 1979).

These psychological benefits imply, however, an underlying need that is being fulfilled by these behaviors. Several studies have linked superstitious behavior to variables related to decreased self functioning. Researchers have associated an increased tendency to engage in superstitious behavior with low self-esteem and ego-strength (Epstein, 1991), low self-efficacy (Tobacyk & Shrader, 1991), external locus of control

(Tobacyk & Milford, 1983), and a variety of other affective measures, such as emotional instability, social rejection, and anxiety (Epstein, 1991; Wiseman & Watt, 2004). These relationships suggest that the desire to engage in superstitious behavior is somehow related to a deficit in the ability to maintain a consistent and positive sense of self-worth, however, this interpretation as yet to be explored in-depth.

The Superstitious Situation

Research has focused on two environmental or situational factors associated with an increased motivation to engage in superstitious behavior, uncertainty and stress. Malinowski (1954) observed that superstitious rituals practiced by the fisherman of the Trobriand Islanders were very common for those who fished in the high risk areas of the ocean, but rather uncommon in the safer, low risk areas. Additionally, Keinan (1994) showed that Israelis living in more dangerous areas during the Gulf War were more likely to endorse superstitious rituals than those living in less dangerous areas.

The primary explanation for this pattern of findings is that both stress and uncertainty undermine an individual's sense of personal control (Fisher, 1986; Lazarus & Folkman, 1984). Hence, individuals placed in stressful situations will often demonstrate increased attempts at regaining a sense of control, in many cases through magical thinking. Friedland, Keinan, & Regev (1992) found that when individuals were placed under stress, they were more likely to choose gambles which provided an illusory sense of control. In this study, participants were asked to choose between two, identical gambles, each involving predicting the outcome of a dice roll. Individuals in the stress condition were more likely to choose the option of predicting the outcome *before* the dice

were rolled, as supposed to *after* the dice were rolled, the former of which providing a greater sense of control. More recently, Case and colleagues (2004) found that individuals playing a game of chance were more likely to rely on decisions made by a psychic as the likelihood of success decreased, suggesting that individuals are especially likely to turn to a superstitious or supernatural strategy when feelings of control are threatened. Case noted that when individuals are faced with these control-threatening situations their subsequent behavioral responses seem to be motivated by a desire to regain a *subjective* sense of control rather than actual control over the situation.

Campbell (1996) has suggested that superstitious rituals function to protect a “fundamental orientation to action”(p. 160). He proposes that when individuals are faced with threatening situations that are uncertain and beyond one’s control, that there is a conflict between behaving in congruence with ones beliefs (superstitious behavior is irrational) and behaving in congruence with one’s values (I am an active agent exercising control over my life). In order to protect the superordinate value of being in control of one’s life, individuals behave incongruent with their beliefs about the world. In a sense, threats to one’s sense of control also have a much broader impact on one’s overall sense of self-worth.

Overall, this evidence suggests that even though individuals may have the ability to reason that superstitious rituals are irrational, there is a competing motive present which is responsible for producing these behaviors. While dual-process theories describe how conflicts between thoughts and behavior may arise, they do not adequately explain why we are unable to use our rational system to scrutinize our superstitious impulses and regulate our behavior. Moreover, while maintaining a sense of control over one’s

environment seems to be a strong motivator behind superstitious behaviors, it has yet to be examined in the larger context of the self-concept.

Self-Esteem Maintenance

Decades of self-related research has established that humans are fundamentally motivated to maintain an adequate level of self-esteem (Baumeister, 1998; Sedikides & Gregg, 2003). This self-esteem maintenance motivation has been implicated as a mediator in many of the most fundamental social psychological phenomena, including decision-making (Josephs, Larrick, Steele, & Nisbett, 1992), social judgment (Dunning & Cohen, 1992), and dissonance (Steele, 1988). Self-esteem is best thought of as “a global self-evaluation that transcends specific aspects of a person’s self-concept” (Vallacher, 2008, p. 3). Individuals may seek to maintain their self-esteem in both global terms and with respect to specific self aspects. Numerous psychological mechanisms have been identified which serve to augment, protect, or repair self-esteem in response to interactions with the external environment (Tesser, 2000 for a list). These mechanisms can be classified into three broad categories: cognitive consistency, value expression, and social comparison.

The notion of cognitive consistency theory is best represented by the cognitive dissonance literature (Festinger, 1957; Wicklund & Brehm, 1976). Cognitive dissonance theory suggests that whenever an individual engages in an action that is discrepant from one’s self-concept, they experience arousal, and subsequently attempt to reduce this arousal by either changing their attitude, changing their behavior, or altering their interpretation of the behavior so that it does not conflict with their self-concept.

Originally, it was thought that restoring cognitive consistency was the sole motivator underlying dissonance reduction strategies, however, other researchers have reframed this motivation in terms of self-esteem maintenance (Greenwald & Ronis, 1978; Aronson, 1992; Tesser, 2000), arguing that inconsistencies should be thought of as global threats to self-esteem.

Research looking at value expression as a mode of self-esteem maintenance has provided evidence that maintaining an *overall* sense of self-integrity may be more important than once thought. According to self-affirmation theory (Steele, 1988), the impact of a self-threat is dependent upon the extent to which the threat compromises a global sense of self-worth and that the goal of the self system is to maintain overall integrity, rather than deal with each individual threat that is encountered. Consequently, when faced with a self-threatening inconsistency, one can either deal with the threat directly, or one can affirm an unrelated aspect of the self-concept, which would reinstate self-integrity after the initial threat. Steele and Liu (1983) found that when individuals committed a dissonant act, being reminded of one of their strengths in another relevant domain would decrease the typical attitude change observed with dissonance. Later research clarified these findings, demonstrating that individuals tend to prefer direct routes to restoring self-integrity (i.e., dealing with the dissonant act), however, indirect routes (i.e., self-affirmation) provide a substantial benefit (Stone, Cooper, Weigand, & Aronson, 1997). To examine this, Stone and colleagues brought students into the lab and assigned them to a dissonance condition where they were made to feel hypocritical about an important value (i.e., practicing safe sexual behavior) or a control condition. Both groups were then given an opportunity to buy condoms at a reduced price. As predicted,

students in the dissonance condition were more likely to buy condoms, presumably in an effort to reduce dissonance. However, when individuals were given an indirect form of repairing the self (donating to a homelessness awareness charity), similar results were found. Allowing individuals to affirm in the domain of charity lessened the blow from dissonance experienced in the domain of safe sex behaviors, suggesting that the impact of a self threat lies with its ability to compromise overall self-integrity rather than a specific domain.

This research is consistent with other studies showing that self-esteem maintenance mechanisms are interchangeable and can be substituted for one another (see Tesser, 2000 for a summary). Tesser and Cornell (1991) have demonstrated that self-affirmed participants do not become threatened by the performance of a close other on a self-relevant task, a typical pattern of behavior associated with the self-evaluation maintenance (SEM) model (Tesser, 1988). Vice versa, they have also shown that positive social comparisons can reduce the tendency to self-affirm (Tesser, Crepaz, Collins, Cornell, & Beach, 2000). The flexibility of the self in terms of its ability to repair itself suggests there is a unifying goal underlying each of the self-esteem maintenance mechanisms. Is superstitious behavior serving this same goal?

Self-Esteem & Control

Several theorists have argued that maintaining a sense of personal control is vital to the self-concept and self-esteem (Bandura, 1977; Heider, 1958). Adler (1930) once referred to personal control as a “necessity of life”. In many cases, self-esteem maintenance requires individuals to suspend objectivity and distort their perceptions of

reality in a self-serving manner (Taylor, 1983). Specifically, when individuals encounter thoughts or events that are particularly threatening to the self-concept, they make cognitive adjustments to help restore their self-esteem. Such strategies include searching for meaning in the experience, developing a propensity for self-enhancing cognitions, and attempting to regain mastery over the event or life in general. The latter of these tendencies, attempting to regain mastery, emphasizes the necessity of personal control and its relationship with self-worth.

Exercising control has been shown to be associated with healthy psychological functioning (Glass & Singer, 1972; Keinan & Zeidner, 1987). Individuals living in nursing homes who were given opportunities to control seemingly trivial environmental conditions (e.g., layout of furniture) reported to be happier than those who were not given these opportunities (Langer & Rodin, 1976). Likewise, when individuals are placed in situations where their sense of control is threatened, they often develop feelings of helplessness (Seligman, 1975). Additionally, having an *exaggerated* sense of control is associated with healthy psychological functioning, while more *accurate* assessments of control are found more commonly in mildly to severely depressed individuals (Abramson & Alloy, 1981; Golin, Terrell, Weitz, & Drost, 1979).

The motivation to maintain a sense of control is so strong that when actual control over a situation is diminished or nonexistent, individuals will attempt to bolster a generalized, subjective sense of control (Pittman & Pittman, 1980; Friedland, Keinan, & Regev, 1992). Langer (1975) found that individuals will often perceive control in situations which are entirely random (e.g., coin tosses), which she referred to as an “illusion of control”. Consistent with these ideas, Rothbaum, Weisz, and Snyder (1982)

have made a key distinction between what they refer to as primary and secondary control. While primary control refers to actively influencing the environment to become more in line with one's wishes, secondary control refers to passively altering one's perceptions to become more in line with the environment. Even this illusory form of control has also been shown to be psychologically beneficial. Cancer patients that perceive control over their illness show more positive outcomes than those who do not (Taylor & Brown, 1988).

Moreover, when initial attempts to regain control over a situation fail, individuals may attempt to restore their sense of control by asserting themselves in an unrelated domain (Abramson, Seligman, & Teasdale, 1978; Liu & Steele, 1986). For example, Pittman and Pittman (1980) found that individuals will make more extreme attributions when their sense of control is threatened, indicating that attributions somehow function to repair one's sense of control over the environment. While the motive to regain *actual* control has been proposed as an explanation for these findings, later work has supported the notion that these attributions are motivated by a desire to maintain "an efficacious self-image" (Liu & Steele, 1986; p. 532). Individuals who engaged in a self-affirmation task after a control threat and prior to making attributions did not exhibit the typical pattern of extreme attributional analysis, suggesting that simply bolstering one's self-concept can nullify the impact of a control threat and that maintaining a subjective sense of control over one's environment is related to maintaining an adequate level of self-esteem.

Self-affirmations have consistently been shown to have an impact on a variety of self-threats. Self-affirmed individuals have displayed a decrease in defensive reactions to

evidence that is contrary to one's personal attitudes (Cohen, Aronson, & Steele, 2000) and have been shown to be less resistant to health risk information (Reed & Aspinwall, 1998; Sherman, Nelson, & Steele, 2000). Most relevant to the current studies, recent work by Whitson and Galinsky (2008) has demonstrated that self-affirmed participants are less likely to exhibit illusory pattern perception, which is a fundamental element contributing to superstitious thinking. Could self-affirmations have the same effect on the desire to engage in superstitious behavior?

Current Research

I would like to argue that maintaining a global sense of self-worth is the ultimate goal underlying superstitious behavior. By broadening the motivation driving superstitious behavior in this manner, we can make specific predictions with regards to how one's self resources, or capacity of the self to deal with threats, should influence superstitious behavior and how the self-concept will be impacted when an individual is deprived of the opportunity to engage in superstitious behavior.

While experiencing a lack of control is associated with an increase in superstitious behavior, it is believed that this increase is as a result of the overall threat to the self-concept. Thus, an event that threatens the self-concept globally, *unrelated* to one's sense of control, should also increase the likelihood of engaging in superstitious behavior. Moreover, individuals with a more robust sense of self-worth, whether it be from a momentary boost to the self-concept or from a more chronic disposition of high self-esteem, should be especially resistant to situations that evoke superstitious behavior.

This line of reasoning also predicts that when individuals are placed in situations designed to evoke superstitious behavior and deprived of the opportunity to act on their superstitious impulses, one should observe a considerable impact to the overall self-concept. More precisely, depriving individuals of the opportunity to engage in superstitious behavior should make the self vulnerable and force individuals to seek other means of restoring self-integrity, such as through self-affirmation.

Additionally, if superstitious behavior is a response to a threat to one's overall self-integrity, then chronic, individual differences in self resources and dynamics should influence the magnitude of the reaction in response to thoughts eliciting superstitious behavior. In particular, an individual's chronic sense of self worth (self-esteem) and how stable that evaluation is over time (self-esteem stability) should both influence the extent to which being deprived of the opportunity to engage in superstitious behavior will affect the overall self-concept.

Individuals with high self-esteem have more positive, clearer views of themselves than individuals with low self-esteem (Baumeister, Tice, & Hutton, 1989; Campbell, 1990). When facing specific self-threats, individuals with high self-esteem have access to a great number of alternative sources of self worth and therefore the less one should need to counter specific threats to maintain global self-integrity (Steele, Spencer, & Lynch, 1993). This increased immunity to self-threats, however, only occurs when one's level of self-esteem is made salient by reminding individuals of their high self-esteem prior to the self-threat. Additionally, individuals with low self-esteem become even more sensitive to a self-threat when reminded of their self resources. Thus, it is predicted that when deprived of the opportunity to engage in superstitious behavior, high self-esteem

individuals that are reminded of their self resources should feel less threatened and less of a need to self-affirm when given the opportunity. Low self-esteem individuals, however, when reminded of their self resources should be even more sensitive to being deprived of an opportunity to engage in superstitious behavior and, as a result, feel an increased need to self-affirm in order to repair self-integrity.

The stability of one's self-esteem should also relate to the extent that an individual engages in affirmation after being deprived of the opportunity to deal with a self-threat through superstition. Self-esteem stability is referred to as "the magnitude of fluctuations in momentary, contextually based self-esteem" (Kernis, Cornell, Sun, Berry, & Harlow, 1993; p. 1190). Individuals with stable self-esteem are generally less affected by moment-to-moment events, while individuals with unstable self-esteem are strongly influenced by circumstantial evaluations (e.g., a compliment; Kernis, Paradise, Whitaker, Wheatman, & Goldman, 2000; Vallacher, Nowak, Froehlich, & Rockloff, 2002). Individuals with unstable self-esteem have also been shown to have an increased focus on self-esteem threatening aspects of aversive events (Waschull & Kernis, 1996). This work suggests that the specific, contextual events that are capable of triggering superstitious behavior should have a greater impact on the self-concept for those with unstable self-esteem in comparison to individuals with stable self-esteem. Therefore, individuals with unstable self-esteem should exhibit more self-affirmation when deprived of the opportunity to engage in a superstitious act than individuals with stable self-esteem.

Additionally, this research looks to provide further support for the notion that the aspect of the self that triggers superstitious behavior when threatened is an individual's sense of control. If the desire to engage in superstitious behavior is a reaction to a threat

to one's sense of control, then the degree of self-affirmation observed in response to being deprived the opportunity to engage in superstition should be dependent upon the importance that control plays within the self-concept. In other words, individuals high in desire for control should exhibit greater self-affirmation when deprived of the opportunity to engage in superstitious behavior in comparison to those low in desire for control. This prediction is consistent with previous work showing that individuals high in desire for control engage in more superstitious behavior than those lower in desire for control and that the desire to engage in superstitious behavior is greater amongst those high in desire for control (Keinan, 2002).

Based on the aforementioned research suggesting that individuals engage in superstitious behavior without believing that their rituals have any actual impact on reality (Bleak & Frederick, 1998; Case et al., 2004; Ciborowski, 1997; Felson & Gmelch, 1979), it is also predicted that self-affirmation in response to being deprived of the opportunity to engage in a superstitious act will be independent of the extent that an individual believes in the efficacy or validity of the act. This is consistent with the idea that self-esteem maintenance often requires suspending objectivity for the purpose of protecting the self-concept (Taylor & Brown, 1988).

Study 1a: Self Resources and the Desire to Engage in Superstitious Behavior

Study 1 sought to provide evidence that the state of an individual's self resources has the potential to predict the likelihood of engaging in superstitious behavior. The goal was to demonstrate that manipulating the self-concept prior to an opportunity to engage in superstition will affect one's desire to use superstitious strategies, even in the absence

of a control threat. If superstitious behavior is designed to maintain global integrity of the self, then buffering the self-concept in a broad manner should reduce the need to engage in superstitious behavior. Therefore, it was predicted that self-affirmed individuals would show less interest in a superstitious strategy than individuals without self-affirmation. Moreover, if the self-concept is *threatened* then the urge to maintain a positive self-image will be intensified, consequently increasing the desire to use the superstitious strategy.

Participants in this study wrote essays designed to either boost or threaten their self-concept and were then presented with a game a chance. When presented the game of chance, participants were offered an opportunity to use a superstitious strategy. The superstitious strategy offered to the participants involved using game chips that were presented as corresponding to the participant's "aura color". Participants were then asked to indicate their desire to use their aura-colored chips.

Method

Participants

Ninety-five Florida Atlantic University undergraduate students participated in return for fulfillment of a research requirement in their General Psychology course. Participants were randomly assigned into one of three conditions: a self-boost condition, a self-threat condition, or a control group.

Materials

In order to manipulate the self-worth of our participants, an important value was obtained from each participant using the Sources of Validation Scale (Harber, 1995).

The Sources of Validation Scale consists of 11 commonly held values (e.g., Creativity, Social Skills, etc.). Participants are asked to rank order the values from 1 (least important value) to 11 (most important value).

Desirability of Aura Scale

As the dependent measure of this study, participants were asked to indicate their desire to use chips of their aura color to play the game on a 7-point Likert scale with “very weakly” and “very strongly” as the endpoints.

Procedure

Upon arrival, the experimenter informed each participant that due to the short amount of time it was going to take to complete the scheduled experiment, the participant was going to participate in another short study that was also being conducted in the same lab. Participants were told that the first study would consist of writing an essay, while the second would involve playing a game.

Participants were first asked to complete the Sources of Validation Scale (Harber, 1995). Using the top ranked value from the scale, participants were then asked to recall a time in recent history in which they felt that they behaved consistently (self-boost condition) or inconsistently (self-threat condition) with that important value (adapted from Tesser et al., 2000). Participants in the control group were simply asked to recall, in a step by step fashion, every activity that they had engaged in up until that point in the day. Upon completion of the essay, participants were told that the first study had concluded.

Participants were then led into the next room where they were told the second study would take place. Participants were shown the game board and told that the purpose of this second study was to examine decision-making in games. The experimenter then explained the game to the participants as follows:

Today, you're going to play a game where you'll try to score as many points as you can. We're going to give you some game disks, which you'll hold at the top of the board, one at a time, and watch them drop down to one of the slots at the bottom, and that will determine your score for that turn. Your final score is going to be the sum of your scores from all of your turns combined. You're going to have ten turns to get as high a score as you can.

Participants were then told that the student who achieves the highest score at the end of the semester will receive a \$100 cash prize. This was included in order to create a desire to perform well at the game. To maintain the cover story, participants were also told that the experimenter would be observing how the participant's decisions changed as a function of what they earned with each disk. Next, participants were presented with the superstitious strategy:

Have you ever heard of an aura? Your aura is a colored field that radiates spiritual energy from your body. The color of your aura is specific to you, and may not be the same as your friends, or even your family members. Moreover, that color – *your* color – when found in objects that are all around you will bring you luck. Based on your birthday, we have determined your aura color and you're going to possibly have a chance to use your aura color to help you play the game today.

Participants then completed the Desirability of Aura Scale that assessed how interested they were in using their aura color chips to play the game. Upon completion of the scale, participants were told that the study was now over and were probed for any suspicions they felt throughout the experiment. They were then debriefed and thanked for participation.

Results

It was predicted that individuals in the self-boost condition would be significantly less interested in the aura color in comparison to a control group, while the self-threat group would be significantly more interested in the aura color in comparison to a control group. A one-way ANOVA was used to test the aforementioned hypothesis. Contrary to what was expected, there were no significant differences found between the experimental groups ($F(2, 92) = .691, ns$). Although the mean of the self-threat group ($M = 4.50, SD = 1.74$) was greater than the control group ($M = 4.03, SD = 1.96$) as predicted, this difference was not significant (see Figure 1).

Discussion

Study 1a was designed to test the hypothesis that self resources would influence one's desire to engage in superstitious behavior. The results did not support this hypothesis, however, this may not be due to a lack of a relationship between self resources and superstitious behavior. One possibility for this result is that self resources were not adequately manipulated. It was assumed that our essay task would impact self resources by asking individuals to recall a time in which they behaved consistently or

inconsistently with an important value. If, however, participants did not engross themselves in their writing and experience affect from recalling these experiences, and instead merely viewed the essay as a mindless task that needed to be completed as soon as possible, then one would not expect any change in self resources. In order to test this alternative explanation for the null findings, Study 1b attempted to validate the original hypothesis of Study 1a using a false feedback manipulation (adapted from Heatherton & Vohs, 2000), which is a more simple and direct method of influencing self resources.

Study 1b: Self Resources and the Desire to Engage in Superstitious Behavior

Study 1b was designed to test the identical hypothesis as Study 1a, using a false feedback manipulation to influence self resources, rather than an essay-writing task. It was predicted that individuals who received a momentary boost to their self-esteem would be less interested in the superstitious strategy, in comparison to individuals who received a momentary threat to their self-esteem.

Participants in this study were given false feedback regarding their performance on a puzzle-solving task and were then presented with a game a chance. As in Study 1a, participants were offered an opportunity to use a superstitious strategy to help them play the game (i.e., aura color). Participants were then asked to indicate their desire to use their aura-colored chips.

Method

Participants

Fifty Florida Atlantic University undergraduate students participated in return for fulfillment of a research requirement in their General Psychology course or for extra credit in another course. Participants were randomly assigned into one of two conditions: a self-boost condition or a self-threat condition.

Materials

Word Puzzle Task

Participants were asked to complete a word puzzle task entitled “Mental Abilities Challenge Quiz” that consisted of thirty word puzzles. The items consisted of abbreviations that corresponded to common mathematical ratios and general knowledge (e.g., 7 D in a W = 7 days in a week, 18H on a GC = 18 holes on a golf course).

Procedure

Upon arrival, the experimenter informed each participant that due to the short amount of time it was going to take to complete the scheduled experiment, the participant was going to participate in another short study that was also being conducted in the same lab. Participants were told that the first study would consist of taking a cognitive test, while the second would involve playing a game.

First, participants completed the Mental Abilities Challenge Quiz. Each participant was told that the test was “a strong indicator of academic achievement and future earning potential” (Heatherton & Vohs, 2000) and was told that the purpose of the

study was to evaluate the ability of FAU undergraduates. Each participant was then given five minutes to solve as many of the items as they could. At the end of the five minutes, the experimenter returned and took the questionnaire from the participant saying “Let me just go score this quickly.” Upon scoring the quiz, participants were randomly assigned to either a self-threat group or a self-boost group. Those in the self-boost group were told that they performed four points *above* the average score, while those in the self-threat group were told that they performed four points *below* the average score. For the sake of believability, participants who answered five items or less were automatically placed into the self-threat group. Upon given this false feedback, participants were told that the first study was now complete and were introduced to the game of chance and the aura color strategy (see Study 1a). Participants then completed the Desirability of Aura Scale that assessed how interested they were in using their aura color chips to play the game. Upon completion of the scale, participants were probed for any suspicions they felt throughout the experiment, then debriefed and thanked for participation.

Results

As with Study 1a, it was predicted that individuals in the self-boost condition would display significantly less desire to use their aura color to play the game than individuals in the self-threat condition. An independent samples t-test was used to examine this hypothesis. Consistent with the results of Study 1a, there was no significant difference between individuals in the self-boost group ($M = 4.23$; $SD = 1.86$) and individuals in the self-threat group ($M = 3.79$; $SD = 1.53$; see Table 1 for a summary) with respect to their desire to use their aura color to play the game ($t(48) = .906$, *ns*). To

ensure that self resources were unaffected by raw performance on the MACQ rather than our false feedback, the correlation between MACQ score and desirability of aura color was calculated and found to be non-significant ($r(50) = .04, ns$).

Discussion

Study 1b was designed to test the hypothesis of Study 1a using a more direct form of manipulating self resources. Contrary to what was expected, Study 1b also found no relationship between an individual's self resources and their desire to use a superstitious strategy to help them play a game. As with Study 1a, the possibility that self resources were not adequately manipulated could serve as the explanation for these null findings. If the manipulations used in these studies had no effect on the participants' self resources, then one would not expect to see differences between the experimental groups.

One way to provide evidence for this explanation would be to include measures assessing self-esteem between the manipulation and the presentation of the game. However, simply *assessing* self-esteem has been shown to make one's chronic level of self-esteem salient, thus manipulating the variable that is being measured (Steele et al., 1993). Therefore, a separate manipulation check was conducted assessing the impact of the false feedback manipulation on self-esteem using a single-item self-esteem scale that has been shown to be highly correlated with the original Rosenberg Self-Esteem Scale (Robins, Hendin, & Trzesniewski, 2001). It was found that the false feedback manipulation used in Study 1b had no impact on self-esteem.

The results of this manipulation check support the notion that the reason there were no differences between the self-boost and the self-threat group, with respect to the

desire to use the aura color, was that the self-esteem manipulation simply was not powerful enough to alter self-esteem in any significant fashion. This explanation is also believed to be true for the findings of Study 1a. These findings are surprising given that both the essay-writing task (McQueen & Klein, 2006; Stone et al., 1997; Tesser et al., 2000) and the false feedback procedure (Heatherton & Vohs, 2000) have both been used successfully to experimentally manipulate self resources. With that being said, further research needs to be conducted in order to clarify these findings and to establish a definitive relationship, or lack thereof, between an individual's self resources and their desire to engage in superstitious behavior.

Study 2: Depriving Superstitious Behavior and the Effects on Self-Integrity

Study 2 sought to support the idea that the function of superstitious behavior is to maintain global self-integrity. The goal was to demonstrate that when an individual is prevented from engaging in a particular superstitious action, one should be able to observe considerable attempts to restore self-integrity through alternative means. More specifically, when an individual is exposed to, but not permitted to use a superstitious strategy to accomplish a certain goal, it is predicted that the individual will experience a threat to their sense of control, which in turn, will disrupt the individual's global sense of self-worth. One particular way to neutralize this threat is to repair the self-concept at the global level through self-affirmation. Therefore, it was predicted that individuals deprived of a superstitious strategy will exhibit more subsequent self-affirmation than individuals given the opportunity to use a superstitious strategy.

It was also predicted that the impact of depriving an individual of a superstitious strategy would be moderated by several factors, including the individual's level of self-esteem (SE), self-esteem stability (SES), and personal desire for control (DC). Individuals with high SE have a highly favorable overall evaluation of their self-concept, which should attenuate the impact of any specific self-threat (Steele et al., 1993). Therefore, if an individual with high SE is reminded of their high SE, less self-affirmation should be observed following the deprivation of a superstitious strategy. Likewise, if an individual with low SE is reminded of their low SE, more self-affirmation should be observed. Additionally, if that SE is relatively stable, everyday events should have a minimal impact on an individual's global sense of self-integrity. Consequently, individuals with high, stable levels of SE should be less threatened by being deprived of the opportunity to engage in superstitious behavior. Moreover, if desire for control is the route through which superstition impacts the global self-concept, then one's efforts to repair the self after being deprived of a superstitious strategy should be proportionate to how important control is to their self-concept, as suggested in previous work (Keinan, 2002).

To summarize, the following hypotheses are proposed: (1) that individuals deprived of their aura color will exhibit more self-affirmation on a subsequent essay task than individuals allowed to use their aura color; (2) that individuals with high SE should display less self-affirmation in response to being deprived of a superstitious strategy than individuals with low SE, but only when reminded of their self-resources; (3) individuals with high SES should exhibit less self-affirmation in response to being deprived of a superstitious strategy than those with low SES; (4) individuals with high DC should

exhibit more self-affirmation in response to being deprived of a superstitious strategy than those with low DC and (5) degree of self-affirmation should be independent of the reported belief in the validity of the aura color.

Participants in this study were presented with a game of chance and were told that they would or would not be allowed to use chips corresponding to their aura color. Then, participants wrote essays about an important value and evaluated the degree to which they self-affirmed in the essay.

Method

Participants

One hundred and eighty-five Florida Atlantic University undergraduate students participated in return for fulfillment of a research requirement in their General Psychology course. Participants were randomly assigned into one of two conditions: an aura condition or a deprivation condition. One hundred and twenty of these participants also completed the Rosenberg Self-Esteem (1965) and Stability (1986) Scale (RSES), the Desirability of Control Scale (Burger & Cooper, 1979), and the Aura Belief Questionnaire.

Materials

Rosenberg Self-Esteem Scale

The Rosenberg Self-Esteem (1965) and Stability (1986) Scale was used to assess the trait or chronic self-esteem of the participants. It is a 14-item scale, with the first ten items designed to assess general feelings of self-worth (e.g., “I take a positive attitude towards myself.”). Participants responded to each item on a 4-point Likert scale with

“Strongly Disagree” and “Strongly Agree” as the endpoints. The last four items of the scale were used to assess self-esteem stability. These items relate to the consistency of one’s self-views (e.g., “My opinion of myself tends to change a great deal.”).

Desirability of Control Scale

The Desirability of Control Scale (Burger & Cooper, 1979) was used to assess the individual’s desire to maintain a sense of control of their environment in a variety of domains (e.g., “I prefer a job where I have a lot of control over what I do and when I do it.” and “I enjoy having control over my own destiny.”). It is a 20-item scale that asks participants to respond using a Likert Scale with “Strongly Disagree” and “Strongly Agree” as the endpoints. This scale previously has been successful at predicting differences in observed superstitious behavior (Keinan, 2002).

Aura Belief Questionnaire

Participants also completed a 2-item scale designed to assess belief in the aura concept (e.g., “To what extent do you think it is possible for an aura to be lucky, in general?” and “To what extent do you think the chips of your aura are more likely to land in high-numbered slots than other colors?”). Participants responded to the questions on a 7-point Likert scale.

Self-Affirmation Questionnaire

In order to assess the impact of the aura manipulation on individuals’ self worth, participants wrote an essay based on an important value obtained from the Sources of Validation Scale (Harber, 1995). Upon completion, participants evaluated the degree of self-affirmation contained in their essay using a 6-item questionnaire (e.g., “How important was the subject of the essay to you?”). Participants responded to the questions

on a 10-point Likert scale. This procedure has previously been used successfully to assess self-affirmation as a dependent variable (Tesser et al, 2000).

Procedure

Data collection was conducted in two, thirty minute sessions. In the first session, participants completed the individual difference measures of interest, including the Rosenberg Self-Esteem (1965) & Stability (1986) Scale (RSES) and the Desirability of Control (DC) Scale (Burger & Cooper, 1979). Upon completion, participants signed up for the second portion of the study, which took place no earlier than three days later.

Upon arriving for the second half of the study, participants were informed that due to the short amount of time it was going to take to complete the second part of the experiment, the participant was going to participate in another short study that was also being conducted in the same lab. They were told that this other study would involve writing an essay.

This portion of the study began in the room containing the game of chance. Participants were first randomly assigned into either a resource-focus or a no resource-focus group. Those in the resource-focus group completed the Rosenberg Self-Esteem (1965) & Stability (1986) Scale for a second time at the start of the experiment. Then, participants were presented the game of chance in the identical manner as it was presented to participants in studies 1a & 1b. The only addition was a piece of dialogue that assigned the participant into either the aura condition or the deprivation condition. Those in the deprivation condition were told that they *would not* be using their aura color chips to play the game, while those in the aura condition were told that they *would* be

using their aura color chips to play the game. At this point, the participant was asked to complete the Aura Belief Questionnaire while the experimenter excused himself to check on another participant. Upon returning, the experimenter informed the participant that someone else was going to play the game and that they would now complete the essay study in the other room before returning to the game portion.

Participants then completed the Sources of Validation Scale (Harber, 1995). Using the top-ranked value from this scale, participants were asked to write an essay describing a time in recent history in which they behaved in a way that expressed this value. Upon completion, participants completed the Self-Affirmation Questionnaire to determine the amount of self-affirmation contained in their essays. Participants were probed for any suspicions they felt throughout the experiment, then debriefed and thanked for participation.

Results

Results were computed with 184 subjects, 120 of which also completed the DC scale and the resource-focus manipulation. Several participants were excluded from the analysis, including six participants for not following the instructions properly and four participants for suspicion during the aura presentation.

Items 3, 5, 8, 9, 10, 11, 12, and 13 of the RSES and items 7, 10, 16, 19, and 20 were reverse coded such that higher values reflected greater self-esteem, self-esteem stability, and desire for control, respectively. Internal reliability of the scales used was assessed using Cronbach's index of internal consistency. The RSES ($\alpha = .825$), the SE stability portion of the RSES ($\alpha = .687$), and the DOC scale ($\alpha = .784$) were all within the acceptable range for internal reliability.

Upon inspection of the essays obtained during the assessment of self-affirmation, it was determined that a minimum word count be imposed to ensure that our data were representative of participants who took the writing task seriously. Thus, a minimum word count of 70 was enforced, which removed seven participants from the analyses.

The dependent measure, degree of self-affirmation, was assessed using the self-affirmation questionnaire. Item 5 of the self-affirmation questionnaire was reverse coded so that higher values indicated greater self-reported self-affirmation in the essay. In order to obtain an index of self-affirmation, a factor analysis was conducting using the items of the self-affirmation questionnaire. Two factors were extracted, with the first factor explaining approximately 47% of the total variance. Factor scores on this first factor were used as the index of self-affirmation.

Hypothesis regarding effects of aura deprivation on self-affirmation

An independent samples t-test was conducted to examine the main effect of aura deprivation on self-affirmation. It was predicted that individuals deprived of their aura color would exhibit more self-affirmation on a subsequent essay task as a means of restoring self-integrity. The results provided support for this hypothesis showing a statistical trend in the predicted direction. Individuals deprived of their aura color exhibited more self-affirmation in their essays ($M = 0.13$; $SD = 0.90$) than individuals that were allowed to use their aura color to play the game ($M = -0.14$; $SD = 1.08$; $t(182) = 1.86$, $p = .064$; $\eta^2_p = .019$ see Table 2 for a summary).

Hypothesis regarding effects of trait self-esteem on self-affirmation following aura deprivation

It was predicted that high SE individuals should display less self-affirmation in their essays than individuals with low SE, however, only when each group was reminded of their respective SE prior to being deprived of their aura. Using a median split of the mean scores from the RSES, participants were broken up into a high SE group and a low SE group. A 2 X 2 X 2 ANOVA (aura/no aura X high SE/low SE X resource-focus/no resource-focus) was conducted to examine these effects. Specifically, it was predicted that the SE X resource-focus interaction would be significant, indicating that the effects of SE on self-affirmation are moderated by whether or not the individuals are reminded of their self-resources. Additionally, this moderation should be stronger when participants are deprived of their aura color, which would be reflected in a significant three-way interaction term.

The results did not provide any support for these hypotheses. Reminding participants of their SE did not affect the relationship between SE and self-affirmation ($F(1, 110) = .097, ns$). The three-way interaction term was also non-significant ($F(1, 110) = 1.60, ns$) indicating that aura deprivation was also unrelated to this predicted relationship. It is important to note that three of the cells examined in this ANOVA contained less than 15 subjects, however, given the low effect size for the SE X resource-focus ($\eta^2_p = .001$) and aura X SE X resource-focus interaction ($\eta^2_p = .014$), within reason, it is unlikely that additional subjects would alter these findings.

Hypothesis regarding effects of self-esteem stability on self-affirmation following aura deprivation

It was predicted that individuals high in SES would exhibit less self-affirmation than individuals low in self-stability when deprived of aura color. More specifically, a significant interaction was predicted between SES and aura, such that the relationship between SES and self-affirmation should be stronger in the aura deprivation condition. Using a median split of the scores from the SES scale of the RSES, participants were broken up into a high SES group and a low SES group. A 2 X 2 ANOVA (aura/no aura X high SES/low SES) was conducted to test this hypothesis. The results did not support this hypothesis, showing a non-significant aura X SES interaction ($F(1, 180) = .001, ns$). Additionally, there was also no main effect for self-stability ($F(1, 180) = 1.38, ns$).

Hypothesis regarding effects of desire for control on self-affirmation following aura deprivation

It was predicted that individuals high in desire for control would exhibit more self-affirmation than individuals low in desire for control when deprived of aura color. More specifically, a significant interaction is predicted between DC and aura, such that the relationship between DC and self-affirmation should be stronger in the aura deprivation condition. Using a median split of the mean scores from the DC scale, participants were broken up into a high DC group and a low DC group. A 2 X 2 ANOVA (aura/no aura X high DC/low DC) was conducted to test this. The results did not support the hypothesis, showing a non-significant aura X DC interaction ($F(1, 115) = .000, ns$). Additionally, there was also no main effect for DC ($F(1, 115) = .835, ns$).

Hypothesis regarding belief in aura on self-affirmation following aura deprivation

It was predicted that the effects of aura deprivation on self-affirmation would be independent of one's self-reported belief in the luckiness of the aura color. A regression model predicting self-affirmation from aura condition and reported belief in the luckiness of aura color was conducted to examine this effect. The results were consistent with our hypothesis. Belief in the luckiness of aura color was unrelated to the amount of observed self-affirmation, even when controlling for the aura condition X belief interaction ($b = .116, ns$).

Discussion

Of the five hypotheses examined in Study 2, two of them were supported by the analyses. Fortunately, one of the two hypotheses that was supported was the main hypothesis that if an individual is deprived of using a superstitious strategy, one can observe subsequent attempts at restoring global self-integrity through alternative means, such as through self-affirmation. When participants were deprived of their aura color before playing a game of chance, they wrote more flattering essays about themselves on a subsequent essay task than participants who were allowed to use their aura color chips to play the game. This increase in self-affirmation supports the idea that superstitious behavior is motivated by a desire to maintain self-integrity of the self-concept by showing that being deprived of the behavior depletes the same resource as more traditional types of self-threats (e.g., dissonance, negative social comparison, etc.).

This experiment did not provide any evidence that trait or chronic self-esteem, as measured by the Rosenberg Self-Esteem Scale (1965), moderated the affect that aura

deprivation had on subsequent self-affirmation. This was true regardless of whether or not participants were reminded of their respective self resources before being presented with a superstitious strategy. These results are inconsistent with previous work showing that when individuals are reminded of their self resources, trait self-esteem becomes a significant predictor of the desire to restore self-integrity following a self-threat (Steele et al., 1993).

Self-esteem stability, as measured by the last four items of the Rosenberg Self-Esteem Scale (1986), was also found to be unrelated to the amount of self-affirmation following aura deprivation. Despite evidence suggesting that individuals with stable self-esteem are less likely to experience self-threats from everyday events (Kernis et al., 1993), such as an opportunity to win a cash prize by playing a game of chance, our results found no difference between individuals with stable vs. unstable self-esteem.

While these four items have been shown to be correlated with other, more dynamic measurements of self-stability (Vallacher et al., 2002), they are nonetheless rather static in nature and rely on an individual's self-reported perceptions of self-esteem stability at a specific time point. It is suggested that using a more in-depth approach to measuring self-esteem stability may yield the predicted relationship regarding impact on the self following the deprivation of a superstitious strategy. Kernis et al. (1993) assessed self-esteem stability by measuring self-esteem via self-report at several time points during a given day, across multiple days, while using the variability in each individual's ratings as an indicator of self-esteem stability. This, more naturalistic method of assessing self-esteem stability, seems to be more indicative of how one's self-esteem should be affected by moment to moment events that one may encounter on a regular

basis, as defined in our predictions. Therefore, future studies using such techniques are necessary in order to adequately examine the effects that self-esteem stability has on an individual's reaction to being deprived of a superstitious strategy.

It was also expected that individual differences in desire for control would be related to the amount of self-affirmation observed following aura deprivation. If depriving an individual of a superstitious strategy does, in fact, threaten one's sense of control, then the degree of self-affirmation observed should be proportionate to the importance of control within the self-concept. Unfortunately, no significant relationship was found between desire for control and self-affirmation. These results are inconsistent with previous data demonstrating that individuals high in desire for control tend to engage in more superstitious behavior than individuals low in desire for control (Keinan, 2002). A possible explanation for this absence of an effect is that the game situation presented to the participants in the experiment may not have been powerful enough to create the control motivation necessary to reveal a relationship between desire for control and self-affirmation. This issue is discussed more in-depth in the general discussion below.

Finally, the impact of aura deprivation on self-affirmation was found to be independent of belief of the validity or luckiness of aura color. This is consistent with previous work demonstrating that individuals will engage in superstitious behavior without actually endorsing belief in the effectiveness of such behaviors (Bleak & Frederick, 1998; Case et al., 2004; Ciborowski, 1997; Felson & Gmelch, 1979). It also provides support for an affective explanation of superstitious behavior, showing that when the self is threatened, rational thought becomes secondary to restoring self-worth.

General Discussion

Overall, these experiments intended to reframe the goal of superstitious behavior as a desire to maintain a global sense of self-integrity or self-worth. Studies 1a and 1b attempted to support this notion by demonstrating that one's self resources prior to encountering an event designed to evoke superstitious behavior are capable of predicting one's desire to engage in such behaviors. Study 2 sought to show that when deprived of a superstitious strategy, one can observe concerted attempts at restoring self-integrity through alternate means, such as through self-affirmation. Additionally, study 2 attempted to show that the impact of depriving an individual of a superstitious strategy is moderated by a variety of factors related to self functioning, including chronic self-esteem, self-esteem stability, and desirability of control.

Study 2 provided some preliminary evidence that superstitious behavior is motivated by a desire to maintain global self-integrity. Individuals who were allowed to use a superstitious strategy to play a game exhibited less self-affirmation on a subsequent essay task than individuals who were deprived of the superstitious strategy. This is the first example within superstition research to demonstrate the self-protective properties of superstitious behavior. This finding suggests that self resources are at stake when individuals are faced with the opportunity to engage in superstitious behavior and that without having that superstitious strategy, one's sense of global self-worth is negatively affected, evidenced by efforts to repair global self-worth subsequently.

This finding also helps to clarify why superstitious behavior seems to persist even in the absence of belief. Consistent with research on self-esteem maintenance, when self-esteem is on the line, rationality takes a back seat to maintaining a positive self-image

(Taylor, 1983; Taylor & Brown, 1988). As with superstitious behavior, even though individuals are capable of viewing such behaviors as irrational (Bleak & Frederick, 1998; Case et al., 2004; Ciborowski, 1997; Felson & Gmelch, 1979), the desire to maintain self-integrity becomes the primary goal directing behavioral intentions.

Our results also support other findings within the superstition literature. Recent research has found that superstition boosts performance on a variety of basic cognitive and motor tasks (Damisch, Stoberock, & Mussweiler, 2010). Participants who were given a “lucky” ball performed better at a golf ball putting task, in comparison to those without the lucky ball. The authors suggest that this boost in performance occurs as a result of increased self-efficacy, which is consistent with the current findings. While the form of self-efficacy examined in these studies was task-specific, it is possible that the superstitious strategy provided a more general boost to self-esteem that trickled down to more specific self-efficacy beliefs. Further research, however, would be necessary to investigate this interpretation.

Studies 1a and 1b were unable to find evidence of a relationship between self resources and the desire to engage in superstitious behavior. This is inconsistent with previous work showing that self-affirmation reduces illusory pattern perception, a process associated with superstitious thinking (Whitson & Galinsky, 2008). As mentioned previously, this is most likely due to the researcher’s inability to adequately manipulate self resources. While these findings are contrary to what was expected, it is important to note that the absence of evidence is not necessarily indicative of evidence of absence. Future research should seek to assess this relationship using different methods of manipulating self resources. One possible fault with Study 1b, is that it attempted to

threaten individuals in a very specific domain (i.e., intelligence). If intelligence was a relatively unimportant value or if individuals did not perceive the puzzle task as a legitimate validation of intelligence, one would not expect to see any negative impact on self-esteem. A stronger manipulation, however, that transcends specific domains of self-worth, such as through social rejection, may provide the change in self resources needed in order to affect one's desire to engage in superstitious behavior.

There are also more general concerns which may help to explain this null result and the lack of evidence in support of the predicted moderators in Study 2. All studies were conducted on-campus, in a laboratory setting. This setting is rather artificial when compared to a more natural environment. A great deal of superstitious behavior is contextually based, in the sense that it is triggered by personally relevant life events (e.g., a sports fan watching a big game). Individuals who knock on wood, for example, do not knock on wood periodically throughout the day, but rather when discussing desirable future outcomes (e.g., possibly getting a promotion). Despite the fact that participants were genuinely interested in winning the cash prize at stake during the game of chance, it is quite possible that the outcome was of little significance to them and thus, the superstitious strategy made available to them was irrelevant to self resources.

In addition to personal relevance, stress and uncertainty may also be necessary conditions to properly examining how self resources affect the desire to engage in superstitious behavior. One of Keinan's (2002) analyses found no correlation between desire for control and superstition when participants were in a low stress condition. Additionally, Case and colleagues found that the desire to use a superstitious strategy to play a game increased significantly when the probability of success dropped below the

50% mark. While previous research has established this impact of stress and uncertainty on superstitious behavior (Friedland, Keinan, & Regev, 1992; Malinowski, 1954; Keinan, 2002), it has been unclear as to how important these conditions are to observing superstitious behavior. However, these results suggest that these conditions are extremely important, if not necessary, to evoking superstitious impulses.

Lastly, many manifestations of superstitious behavior are idiosyncratic in nature. In the aforementioned experiments, aura color was chosen as the superstitious strategy that would be available to each of the participants. The explanation of the aura color was intended to be vague and incorporated a variety of magical terms (e.g., lucky, spiritual). It was therefore assumed that this option would be a valid manifestation of a desire to use a superstitious strategy in order to obtain a higher score in the game of chance. This, however, limits our assessment of superstitious impulses to the extent that a potentially novel superstitious strategy would be of interest to our participants. A great deal of superstitious behavior manifests itself in idiosyncratic rituals and self-evaluated lucky charms. In the real world, these forms of superstitious behavior are much more likely to be accessed in response to a self-threat. Consequently, a lack of interest in the aura color chips may indicate a specific rejection of aura color, rather than the absence of superstitious impulses for the purpose of self-esteem repair.

Limitations & Generalizations

The aforementioned studies have provided some evidence for a self-esteem maintenance approach to explaining superstitious behavior. There are, however, some important limitations with respect to these specific studies. Almost all participants in

these studies were college-aged, undergraduate psychology students. While there is no ostensible reason to believe that the motivations behind superstitious behavior would necessarily differ as a function of age, some characteristics of the participants in these studies, specifically, age and education-level, have been associated with lesser amounts of superstitious behavior. Epstein (1993) surveyed three groups of individuals—children aged 9-12, college students aged 18-22, and adults aged 27-65—about a variety of superstitious beliefs and practices. Although the endorsement of some forms of magical thinking decreased with age (e.g., belief in mental telepathy), belief in good luck charms and superstitious rituals increased with age. Thus, it is plausible to think that the effects found in this study would be greater if the sample was expanded to include middle-aged and older adults.

Level of education is another demographic variable of concern. As mentioned previously, there are several studies showing that education-level is negatively associated with superstitious beliefs (Blum & Blum, 1974; Aarnio & Lindeman, 2005). Since all participants in this study are current college students, it is suggested that overall belief in superstition may be relatively low, both compared to similar aged peers, as well as the general public. Thus, expanding this research to include individuals with varying levels of education would likely yield stronger overall effects.

Future Research

Future research in this area should seek to investigate whether or not other forms of magical thinking are related to self-esteem maintenance. This includes domains such as paranormal agents (e.g., belief in ghosts, spirits), paranormal abilities (e.g., ESP,

telekinesis), belief in astrology (the position of the stars at time of birth influences personality), and belief in a higher power (e.g., God). One study found that belief in astrology served as a method of verifying important self aspects, also known as self-verification, which is considered to be a mechanism of self-esteem maintenance (Lillqvist & Lindeman, 1998). Another study found a significant relationship between one's self-esteem and their conception of God. Individuals with high self-esteem were more likely to perceive God as a "loving" figure, while individuals low in self-esteem were more likely to perceive God as a "rejecting" or "controlling" entity. (Benson & Spelka, 1973). Terror management theory (Greenberg, Pyszczynski, & Solomon, 1986) describes one of the fundamental purposes of self-esteem as a method of buffering anxiety that develops from knowledge of our mortality. This conceptualization of self-esteem fits well into a self-esteem maintenance based explanation for superstition and magical thinking given that the majority of paranormal beliefs imply existence after death.

Additionally, more broad forms of magical thinking, such as belief in sympathetic magic (Rozin, Millman, & Nemeroff, 1986), apparent mental causation (Pronin, Wegner, McCarthy, & Rodriguez, 2006), and tempting fate (Risen & Gilovich, 2008) may greatly benefit from considering the role that self-esteem maintenance may play in motivating these beliefs and behaviors. Self-motives tend to go unmentioned in the explanations of these types of phenomena, however, given the pervasive desire to maintain one's sense of self-worth, future studies should consider the inclusion of self-related measures.

Conclusions

While many questions remain unanswered, we have provided some evidence that superstitious behavior impacts one's overall sense of self-integrity. Without the use of superstition, individuals subsequently engaged in behavior designed to repair self-esteem following a self-threat. Still, it is uncertain if self-esteem maintenance is the primary motive behind superstitious behavior. However, given the established links between lacking control and superstition, as well as the work demonstrating the importance of control in maintaining self-integrity, it is unlikely that the functioning of the self-concept is unrelated to the desire to engage in superstitious behavior. The breadth of irrational behaviors that have been associated with self-esteem maintenance suggests that superstition should be examined from this perspective.

The reasons behind the persistence of superstition across both time and culture have only been partially documented and are still being investigated. While great strides have been made in describing the who and the when behind these behaviors, the why remains unclear. Hopefully, one of the most important and ubiquitous psychological constructs, the self, may provide some much needed insight regarding the forces driving the superstitious mind

REFERENCES

- Aarnio, K., & Lindeman, M. (2005). Superstition, education and thinking styles. *Personality and Individual Differences, 39*, 1227–1236.
- Abramson, L. Y., & Alloy, L. B. (1981). Depression, non-depression, and cognitive illusions: A reply to Schwartz. *Journal of Experimental Psychology, 110*, 436-447.
- Abramson, L., Seligman, M., & Teasdale, J. (1978). Learned helplessness in humans: Critique and reformulation. *Journal of Abnormal Psychology, 87*, 49-74.
- Adler, A. Individual psychology. In C. Murchinson (Ed.), *Psychologies of 1930*. Worcester, Mass:Clark University Press, 1930.
- Alcock, J. E., & Otis, L. P. (1980). Critical thinking and belief in the paranormal. *Psychological Reports, 46*, 479-482.
- Aronson, E. (1992). The return of the repressed: Dissonance theory makes a comeback. *Psychological Inquiry, 3*, 303-311.
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Baumeister, R.F. (1998). The self. In D.T. Gilbert, S.T. Fiske, & G. Lindzey (Eds.), *Handbook of social psychology* (4th ed., pp. 680–740). New York: McGraw-Hill.
- Baumeister, R. E, Tice, D. M., & Hutton, D. G. (1989). Self-presentational motivations and personality differences in self-esteem. *Journal of Personality, 57*, 547-579.
- Blackmore, S. (1997). Probability misjudgment and belief in the paranormal: A newspaper survey. *British Journal of Psychology, 88*, 683–690.

- Bleak, J. L., & Frederick, C. M. (1998). Superstitious behavior in sport: Levels of effectiveness and determinants of use in three collegiate sports. *Journal of Sport Behavior*, 21, 1-15.
- Blum, S. H. & Blum, L. H. (1974). Do's and don't's: An informal study of some prevailing superstitions. *Psychological Reports*, 35, 567-571.
- Burger, J. M., & Cooper, H. M. (1979). The desirability of control. *Motivation and Emotion*, 3, 381-393.
- Campbell, C. (1996). Half-belief and the paradox of ritual instrumental activism: A theory of modern superstition. *British Journal of Sociology*, 47, 151-166.
- Campbell, J. (1990). Self-esteem and clarity of the self-concept. *Journal of Personality and Social Psychology*, 59, 1-12.
- Case, T. I., Fitness, J., Cairns, D.R., & Stevenson, R.J. (2004). Coping with Uncertainty: Superstitious Strategies and Secondary Control. *Journal of Applied Social Psychology*, 34, 848–71.
- Ciborowski, T. (1997). “Superstition” in the collegiate baseball player. *Sport Psychologist*, 11, 305-317.
- Cohen G. L., Aronson, J., & Steele, C. M. (2000). When Beliefs Yield to Evidence: Reducing Biased Evaluation by Affirming the Self. *Personality & Social Psychology Bulletin*, 26, 1151-1164.
- Dag, I. (1999). The relationships among paranormal beliefs, locus of control and psychopathology in a Turkish college sample. *Personality and Individual Differences*, 26, 723–737.
- Damisch, L., Stoberock, B., & Mussweiler, T. (2010). Keep your fingers crossed!: How

superstition improves performance. *Psychological Science*. doi:
10.1177/0956797610372631

Dunning, D., & Cohen, G. L. (1992). Ego-centric definitions of traits and abilities in social judgment. *Journal of Personality and Social Psychology*, 63, 341-355.

Epstein, S. (1991). Cognitive-experiential self theory: Implications for developmental psychology. In M. Gunnar & L. A. Stroufe (eds.), *Self-processes and development*. Minnesota symposia on child psychology, vol 23. (79-123). Hillsdale, NJ: Erlbaum.

Epstein, S., Pacini, R., Denes Raj, V., & Heier, H. (1996). Individual differences in intuitive-experiential and analytical-rational thinking styles. *Journal of Personality and Social Psychology*, 71, 390–405.

Epstein, S., & Pacini, R. (1999). Some basic issues regarding dual-process theories from the perspective of Cognitive-Experiential Self-Theory. In Chaiken, S., & Y. Trope (Eds.), *Dual-Process Theories in Social Psychology* (pp. 462-482). New York: Guilford Press.

Evans, J. S. B. T. (2003). In two minds: Dual-process accounts of reasoning. *Trends in Cognitive Science*, 7, 454–459.

Felson, R. B., & Gmelch, G. (1979). Uncertainty and the use of magic. *Current Anthropology*, 20, 587-589.

Festinger, L. (1957). *A theory of cognitive dissonance*. Evanston, IL: Row, Peterson.

Fisher, S. (1986). *Stress and strategy*. Hillsdale, NJ: Erlbaum.

Friedland, N., Keinan, G., & Regev, Y. (1992). Controlling the uncontrollable: Effects of

- stress on illusory control. *Journal of Personality and Social Psychology*, 63, 923-931.
- Glass, D. C., & Singer, J. E. (1972). *Urban stress: Experiments on noise and social stressors*. San Diego, CA: Academic Press.
- Golin, S., Terrell, T., Weitz, J., & Drost, P. L. (1979). The illusion of control among depressed patients. *Journal of Abnormal Psychology*, 8, 454-457.
- Greenwald, A. G., & Ronis, D. L. (1978). Twenty years of cognitive dissonance: Case study of the evolution of a theory. *Psychological Review*, 85, 53-57.
- Harber, K. (1995). *Sources of Validation Scale*. Unpublished scale.
- Heatherton, T. F., & Vohs, K. D. (2000). Interpersonal evaluations following threats to self: Role of self-esteem. *Journal of Personality & Social Psychology*, 78, 725-736.
- Heider, F. (1958). *The psychology of interpersonal relations*. New York: Wiley.
- Josephs, R. A., Larrick, R. P., Steele, C. M., & Nisbett, R. E. (1992). Protecting the self from the negative consequences of risky decisions. *Journal of Personality and Social Psychology*, 62, 26-37.
- Keinan, G. (1994). Effects of stress and tolerance of ambiguity on magical thinking. *Journal of Personality and Social Psychology*, 67, 48-55.
- Keinan, G. (2002). The effects of stress and desire for control on superstitious behavior. *Personality and Social Psychology Bulletin*, 28, 102-108.
- Keinan, G., & Zeidner, M. (1987). Effect of decisional control on state anxiety and achievement. *Personality and Individual Differences*, 8, 973-975.
- Kernis, M. H., Cornell, D. P., Sun, C. R., Berry, A. J., & Harlow, T. (1993). There's more

- to self-esteem than whether it is high or low: The importance of stability of self-esteem. *Journal of Personality and Social Psychology*, 65, 1190-1204.
- Kernis, M. J., Paradise, A. W., Whitaker, D. J., Wheatman, S. R., & Goldman, B. N. (2000). Master of one's psychological domain? Not likely if one's self-esteem is unstable. *Personality & Social Psychology Bulletin*, 26, 1297-1305
- Killeen, P., Wildman, R. W., & Wildman, R. W. II (1974). Superstitiousness and intelligence. *Psychological Reports*, 34, 1158.
- Langer, E. J. (1975). The illusion of control. *Journal of Personality and Social Psychology*, 32, 311-328.
- Langer, E. J., & Rodin, J. (1976). The effects of choice and enhanced personal responsibility for the aged: A field experiment in an institutional setting. *Journal of Personality & Social Psychology*, 34, 191-198.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.
- Lillqvist, O., & Lindeman, M. (1998). Belief in astrology as a strategy for self-verification and coping with negative life-events. *European Psychologist*, 3, 202-208.
- Lindeman, M., & Aarnio, K. (2006). Paranormal beliefs: Their dimensionality and correlates. *European Journal of Personality*, 20, 585-602.
- Liu, T. J., & Steele, C. M. (1986). Attributional analysis as self-affirmation. *Journal of Personality and Social Psychology*, 51, 531-540.
- Malinowski, B. (1954). *Magic, science, and religion*. Garden City, NY: Doubleday.
- McQueen, A., & Klein, W. M. P. (2006). Experimental manipulations of self-affirmation:

- A systematic review. *Self and Identity*, 5, 289-354.
- Neil, G. (1980). The place of superstition in sport: The self-fulfilling prophecy. *Coaching Review*, 3, 40-42.
- Newport, F., & Strausberg, M. (2001). *Americans' belief in psychic and paranormal phenomena is up over last decade*. Princeton: Gallup News Service.
- Orenstein, A. (2002). Religion and paranormal belief. *Journal for the Scientific Study of Religion*, 41, 301–311.
- Otis, L. P., & Alcock, J. E. (1982). Factors affecting extraordinary belief. *The Journal of Social Psychology*, 118, 77-85.
- Pacini, R., & Epstein, S. (1999). The relation of rational and experiential information processing styles to personality, basic beliefs, and the ratio-bias phenomenon. *Journal of Personality and Social Psychology*, 76, 972–987.
- Pittman, T. S., & Pittman, N. L. (1980). Deprivation of control and the attribution process. *Journal of Personality and Social Psychology*, 39, 377-389.
- Reed, M. B., & Aspinwall, L. G. (1998). Self-affirmation reduces biased processing of health-risk information. *Motivation and Emotion*, 22, 99-131.
- Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001). Measuring global self-esteem: Construct validation of a single-item measure and the Rosenberg Self-Esteem Scale. *Personality & Social Psychology Bulletin*, 27, 151-161.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Rosenberg, M. (1986). Self-concept from middle childhood through adolescence. In J. Suls & A. G. Greenwald (Eds.), *Psychological perspectives on the self* (Vol. 3).

Hillsdale, NJ: Lawrence Erlbaum.

Rothbaum, F., Weisz, J. R., & Snyder, S. S. (1982). Changing the world and changing the self: A two-process model of perceived control. *Journal of Personality and Social Psychology, 42*, 5-27.

Sedikides, C., & Gregg, A.P. (2003). Portraits of the self. In M.A. Hogg & J. Cooper (Eds.), *Sage handbook of social psychology* (pp. 110–138). London: Sage Publications

Seligman, M. (1975). *Helplessness: On depression, development, and death*. San Francisco, CA: Freeman.

Sherman, D. A. K., Nelson, L. D., & Steele, C. M. (2000). Do messages on health threaten the self? Increasing the acceptance of threatening health messages via self-affirmation. *Personality and Social Psychology Bulletin, 26*, 1046-1057.

Slooman, S. A. (1996). The empirical case for two systems of reasoning. *Psychological Bulletin, 119*, 3–22.

Stanovich, K. E., & West, R. F. (2000). Individual differences in reasoning: Implications for the rationality debate? *Behavioral and Brain Sciences, 23*, 645–726.

Steele, C. M. (1988). The psychology of self-affirmation: Sustaining the integrity of the self. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 21, pp. 261-302). New York: Academic Press.

Steele, C. M., & Liu, T. J. (1983). Dissonance processes as self-affirmation. *Journal of Personality and Social Psychology, 45*, 5-19.

Steele, C. M., Spencer, S. J., & Lynch, M. (1993). Self-image resilience and dissonance: The role of affirmational resources. *Journal of Personality and Social*

- Psychology*, 64, 885 – 896.
- Stone, J., Wiegand, A. W., Cooper, J., & Aronson, E. (1997). When exemplification fails: Hypocrisy: and the motive for self-integrity. *Journal of Personality and Social Psychology*, 72, 54-63.
- Taylor, S. E. (1983). Adjustment to threatening events: A theory of cognitive adaptation. *American Psychologist*, 38, 1161-1173.
- Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin*, 103, 193-210.
- Tesser, A. (1988). Toward a self-evaluation maintenance model of social behavior. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 21, pp. 181-227). New York: Academic Press.
- Tesser, A. (2000). On the confluence of self-esteem maintenance mechanisms. *Personality and Social Psychology Review*, 4, 290–299.
- Tesser, A., & Cornell, D. P. (1991). On the confluence of self-processes. *Journal of Experimental Social Psychology*, 27, 501-526.
- Tesser, A., Crepaz, N., Collins, J., Cornell, D., & Beach, S. (2000). Confluence of self-esteem regulation mechanisms: On integrating the self-zoo. *Personality and Social Psychology Bulletin*, 26, 1476–1489.
- Tobacyk, J., & Milford, G. (1983). Belief in paranormal phenomena: Assessment instrument development and mplications for personality functioning. *Journal of Personality and Social Psychology*, 44, 1029–1037.
- Tobacyk, J., & Shrader, D. (1991). Superstition and self-efficacy. *Psychological Reports*, 68, 1387–1388.

- Whitson, J. A., & Galinsky, A. D. (2008). Lacking control increases illusory pattern perception. *Science*, 322, 115-117.
- Wicklund, R. A., & Brehm, J. W. *Perspectives on cognitive dissonance*. Hillsdale, N.J.: Erlbaum, 1976.
- Wiseman, R., & Watt, C. (2004). Measuring superstitious belief: Why lucky charms matter. *Personality and Individual Differences*, 37, 1533-1541.
- Wolfradt, U., Oubaid, V., Straube, E. R., Bischoff, N., & Mischo, J. (1999). Thinking styles, schizotypal traits and anomalous experiences. *Personality and Individual Differences*, 27, 821–830.
- Womack, M. (1979). Why athletes need ritual: As study of magic among professional athletes. In W. J. Morgan (Ed.), *Sport and the humanities: A collection of original essays*. Knoxville, TN: The Bureau of Educational Research and Service, College of Education, The University of Tennessee.
- Vallacher, R. R. (2008). Self: The unity of self, self-consistency. In W. banks (Ed.), *Encyclopedia of consciousness*. Oxford, UK: Elsevier Ltd.
- Vallacher, R. R., Nowak, A., Froehlich, M., & Rockloff, M. (2002). The dynamics of self-evaluation. *Personality and Social Psychology Review*, 6, 370–379.
- Waschull, S. B., & Kernis, M. H. (1996). Level and stability of self-esteem as predictors of children's intrinsic motivation and reasons for anger. *Personality and Social Psychology Bulletin*, 22, 4-13.
- Za'rour, G. I. (1972). Superstitions among certain groups of Lebanese Arab students in Beirut. *Journal of Cross-Cultural Psychology*, 3, 273–282.

Table 1. Means & Standard Deviations of Desirability of Aura Color Across Self Resource Conditions

	Study 1a (N = 95) (<i>M</i> / <i>SD</i>)	Study 1b (N = 50) (<i>M</i> / <i>SD</i>)
<i>Self Resource Condition</i>		
Self-Boost	4.10 / 1.42	4.23 / 1.86
Self-Threat	4.50 / 1.74	3.79 / 1.53
Control	4.03 / 1.96	-

Table 2. Means & Standard Deviations of Self-Affirmation Index Scores for Aura Conditions and Predicted Moderator Variables

	<i>Aura Condition</i>	
	No Aura (<i>M / SD</i>)	Aura (<i>M / SD</i>)
<i>SE X Resource Focus</i> (N = 118)		
Low/Reminded	-0.11 / 0.90	-0.06 / 1.48
Low/Not Reminded	0.39 / 0.64	-0.54 / 1.29
High/Reminded	0.25 / 0.97	0.18 / 0.75
High/Not Reminded	0.11 / 1.15	0.08 / 1.00
<i>SE Stability</i> (N = 184)		
Low	0.03 / 0.84	-0.21 / 1.22
High	0.21 / 0.94	-0.36 / 0.83
<i>Desirability of Control</i> (N = 119)		
Low	0.09 / 0.87	-0.23 / 1.18
High	0.28 / 0.98	-0.05 / 1.18
<i>Total</i> (N = 184)	0.13 / 0.90	-0.14 / 1.08

Figure 1. Mean Desirability of Aura Rating Across Self Resource Groups (Study 1a)

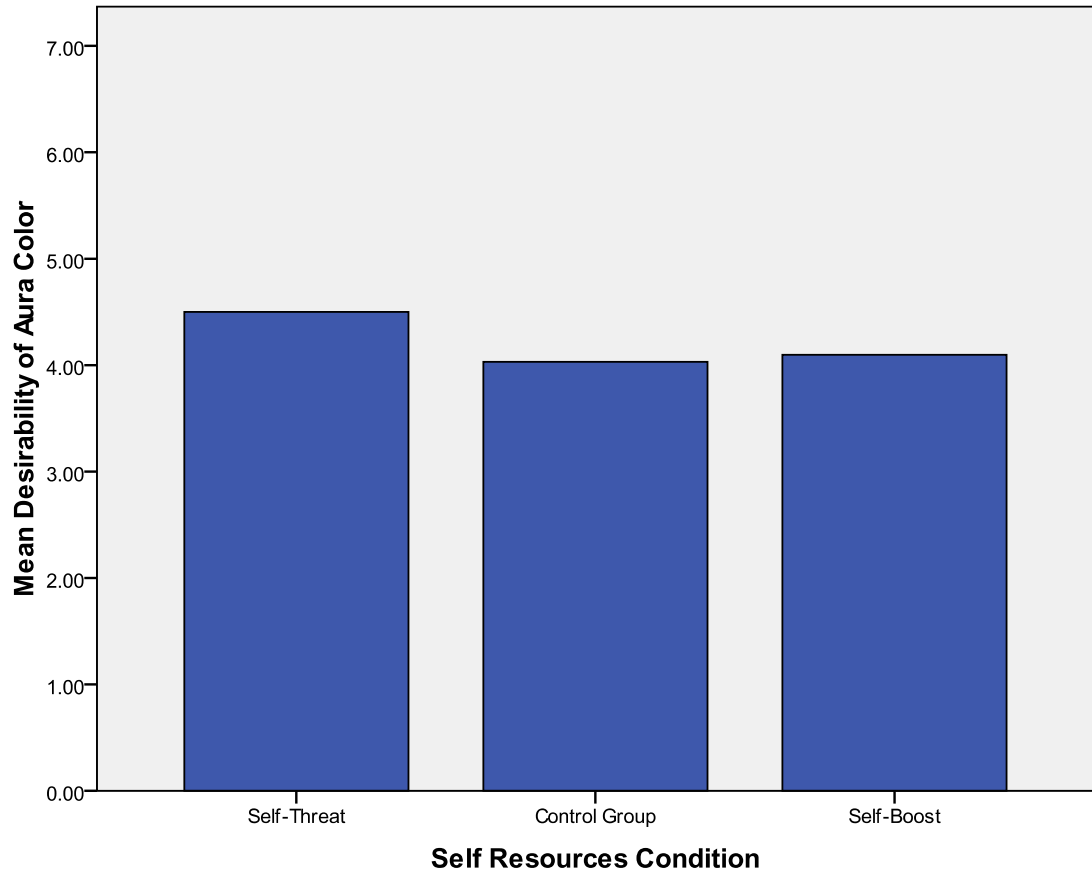


Figure 2. Mean Desirability of Aura Rating Across Self Resource Groups (Study 1b)

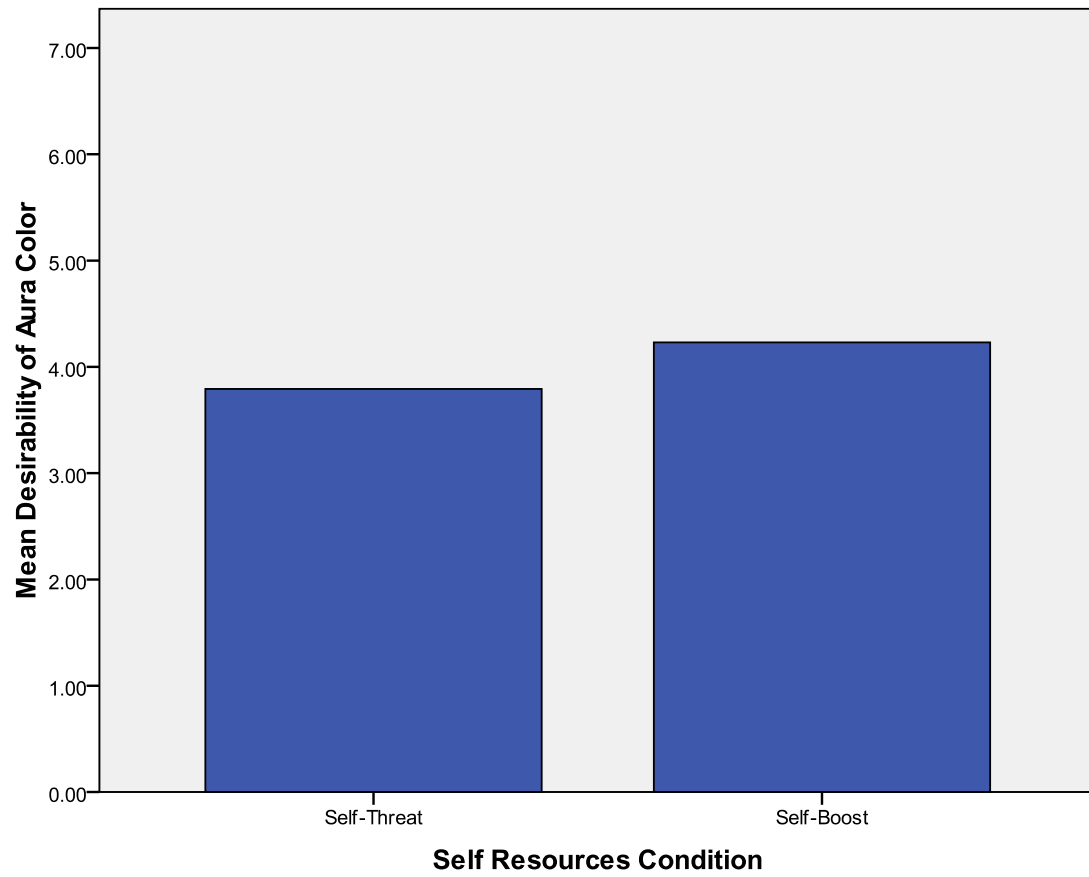


Figure 3. Mean Self-Affirmation Index Scores for Aura Groups

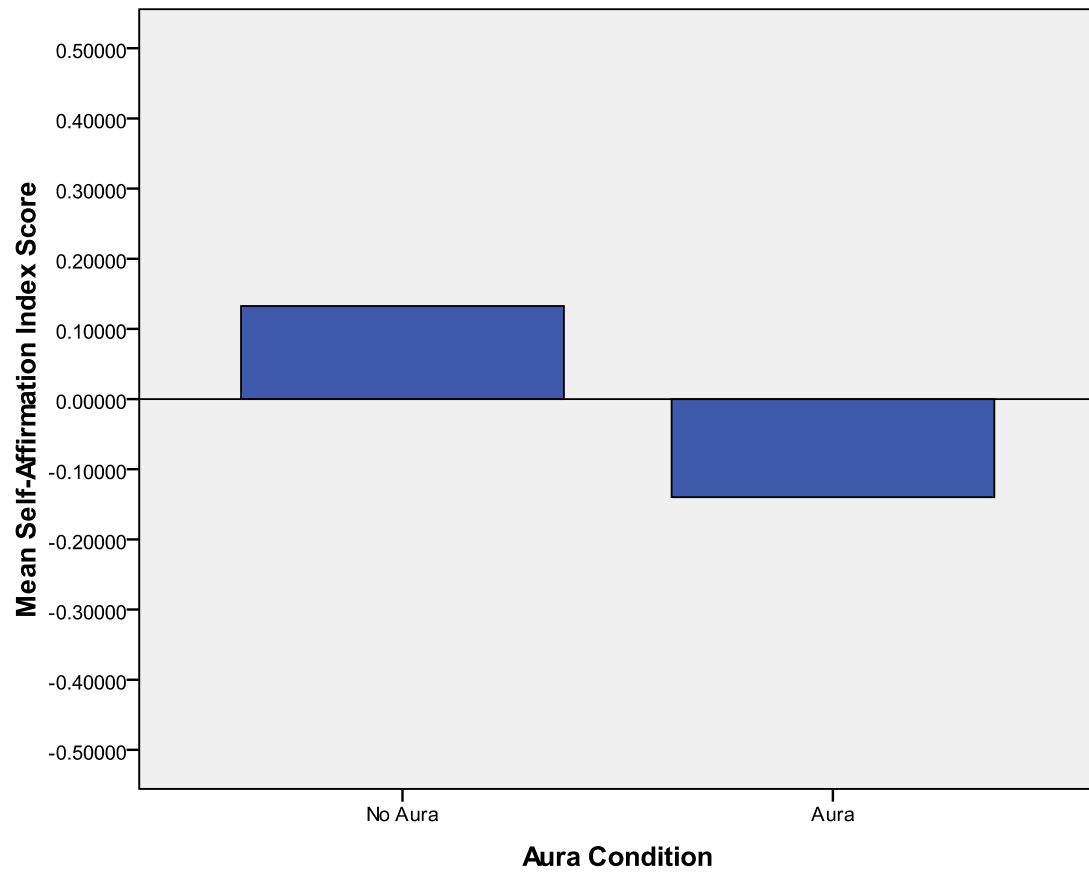


Figure 4. Mean Self-Affirmation Index Scores for SE X Resource-Focus Interaction

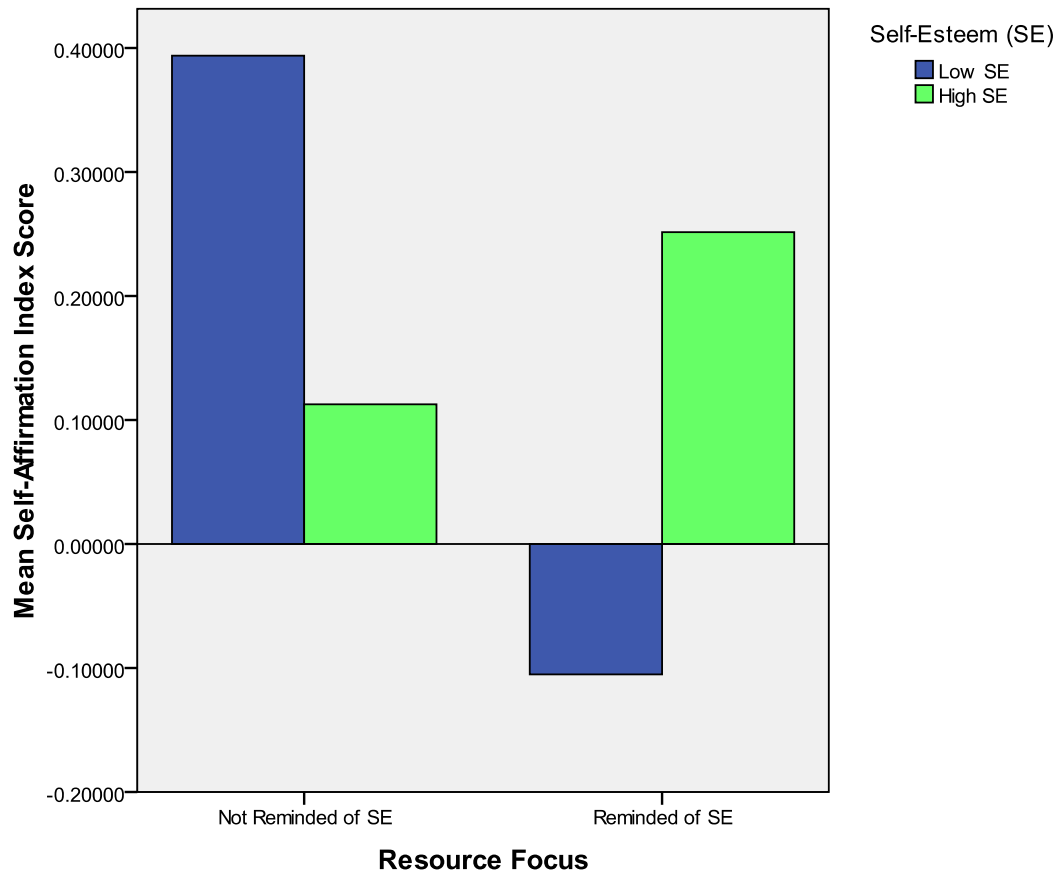


Figure 5. Mean Self-Affirmation Index Scores for SE Stability Groups

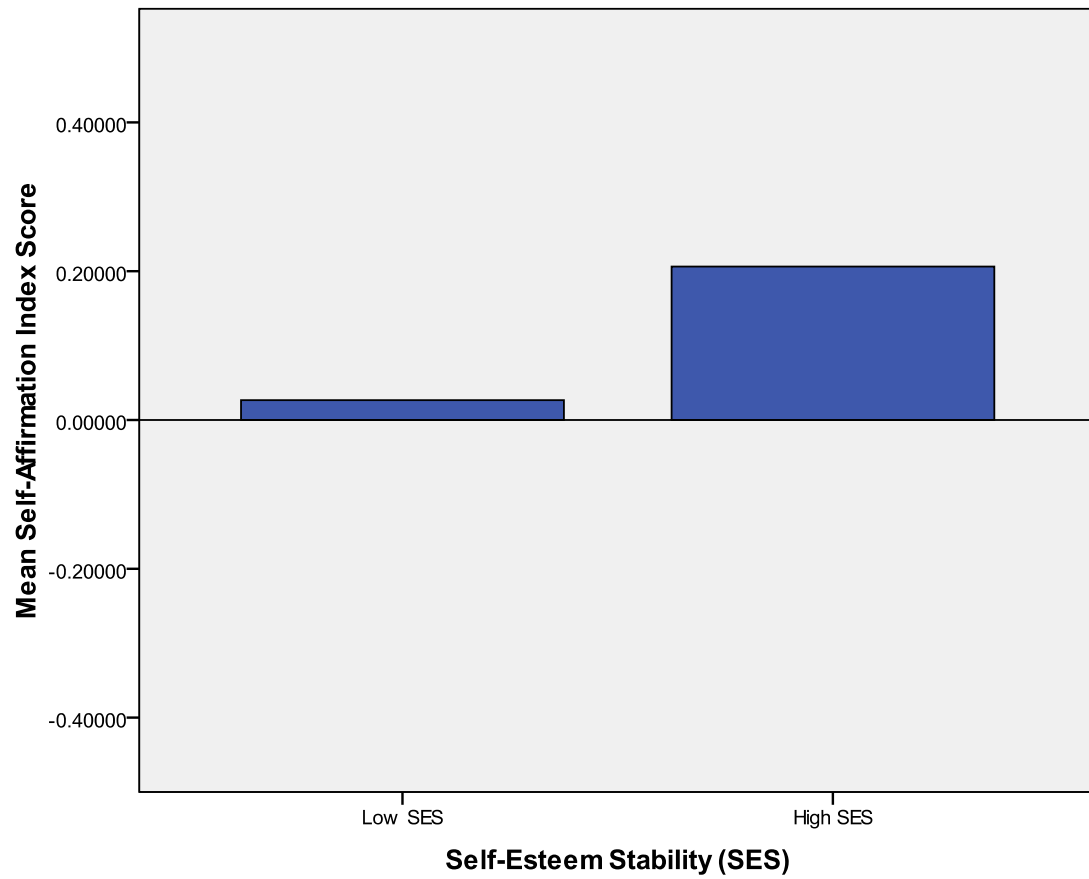
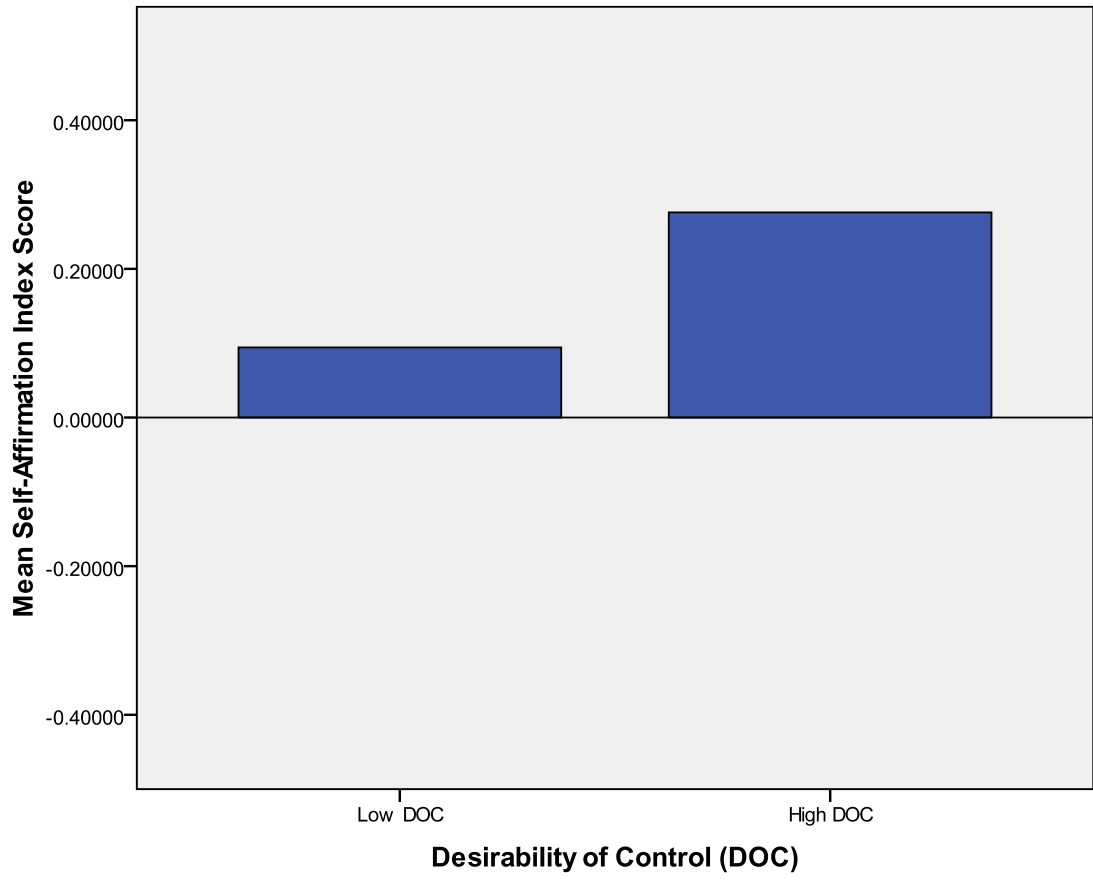


Figure 6. Mean Self-Affirmation Index Scores for DOC Groups



APPENDICES

Sources of Validation Scale¹

Instructions: Below is a list of characteristics and values, some of which may be important to you, some of which may be unimportant. Please rank these values and qualities in order of their importance to you, from 1 to 11 (1 = most important item, 11= least important item). Use each number only once.

- _____ Artistic skills/aesthetic appreciation
- _____ Sense of humor
- _____ Relations with friends/family
- _____ Spontaneity/living life in the moment
- _____ Social skills
- _____ Athletics
- _____ Musical ability/appreciation
- _____ Physical attractiveness
- _____ Creativity
- _____ Business/managerial skills
- _____ Romantic values

¹ Harber, 1995

Desirability of Aura Questionnaire

Instructions: Please answer the following questions. There are no right or wrong answers.

1. In this study, some of you will be allowed to use your aura color and some of you will not. Given this fact, how strongly do you desire to use your aura color chips to play the game?

1	2	3	4	5	6	7
Very Weakly			Somewhat			Very Strongly

2. How upset will you be if you are not able to use chips of your aura color to play the game?

1	2	3	4	5	6	7
Not at all Upset		Somewhat Upset			Very Upset	

3. During the game, you will be given 10 chips to play with. Would you be willing to play the game with **less** chips if you were guaranteed the opportunity to use your aura color? If so, what is the minimum amount of chips that you would accept in order to play the game with your aura color chips? Please answer below.

_____ No, I would not sacrifice any chips in order to use my aura color chips.

_____ Yes, I would play with as few as _____ chips, as long as they correspond to my aura color.

4. How interested are you in the \$100 cash prize for achieving the highest score of the semester?

1	2	3	4	5	6	7
Not at all Interested			Somewhat Interested			Very Interested

Study 1a Essay Prompts

Self-Boost Condition: You have indicated that _____ is a very important value in your life. Right now, we would like you to recall a time in recent history in which you felt that you behaved in a way that expressed this important value. You will have 20 minutes to complete this essay.

Self-Threat Condition: You have indicated that _____ is a very important value in your life. Right now, we would like you to recall a time in recent history in which you felt that you behaved **inconsistent** with this important value. You will have 20 minutes to complete this essay.

Control Condition: Right now, we would like you to recall, in a step-by-step fashion, every activity that you have engaged in today up until the current moment. Please be as detailed as possible. You will have 20 minutes to complete this essay.

Study 2 Essay Prompt

Instructions: You have indicated that _____ is a very important value in your life. Right now, we would like you to recall a time in recent history in which you felt that you behaved in a way that expressed this important value. You will have 20 minutes to complete this essay.

Mental Abilities Challenge Quiz

Instructions: Please solve as many of the following puzzles as you can. For example, “24 H in a D” is “24 hours in a day”. You will have 3 minutes to complete as many items as you can.

1. 7 D of the W _____
2. 26 L of the A _____
3. 12 M in a Y _____
4. 13 S in the USF _____
5. 9 L of a C _____
6. 18 H on a GC _____
7. 90 D in a RA _____
8. 7 C on the E _____
9. 2 W on a B _____
10. 25 C in a Q _____
11. 12 I in a F _____
12. 60 S in a M _____
13. 10 A in the B of R _____
14. 4 H of the A _____
15. 9 I in a B G _____
16. 8 S on a SS _____
17. 54 C in a D (with J) _____
18. 4 Q in a G _____
19. 5 D in a ZC _____

20. 12 K of the RT _____
21. 5 F on the H _____
22. 29 D in F in a LY _____
23. 6 P on a PT _____
24. 52 W in a Y _____
25. 7 D with SW _____
26. 3 F in a Y _____
27. 435 M of the H of R _____
28. 3 BM (SHTR) _____
29. 64 S on a CB _____
30. 13 in a BD _____

Self-Affirmation Questionnaire²

Instructions: Please answer the following questions regarding the essay you just completed by circling one number for each question.

1. How important was the subject of your essay to you?

1	2	3	4	5	6	7	8	9	
Not at all Important									Very Important

2. How did you feel after writing the essay?

1	2	3	4	5	6	7	8	9	
Bad									Good

3. Would you say the topic of your essay concerned a central part or a peripheral part of your self?

1	2	3	4	5	6	7	8	9	
Peripheral									Central

4. To what extent was the aspect you wrote about positive or negative?

1	2	3	4	5	6	7	8	9	
Negative									Positive

5. To what extent are you ashamed of the aspects of yourself that you wrote about?

1	2	3	4	5	6	7	8	9	
Not at all Ashamed									Very Ashamed

6. To what extent are you proud of the aspects of yourself that you wrote about?

1	2	3	4	5	6	7	8	9	
Not at all Proud									Very Proud

² Based on Tesser, Crepaz, Collins, Cornell, & Beach, 2000

Rosenberg SE & Stability³

These questions measure your general feelings about yourself. Answer each item honestly and to the best of your knowledge at this time.

Directions: Indicate how strongly you agree or disagree with each item. Circle the answer that best captures how you feel about yourself.

1. I feel that I'm a person of worth, at least on equal plane with others.

Strongly agree Agree Disagree Strongly disagree

2. I feel that I have a number of good qualities.

Strongly agree Agree Disagree Strongly disagree

3. All in all, I am inclined to feel that I'm a failure.

Strongly agree Agree Disagree Strongly disagree

4. I am able to do things as well as most other people.

Strongly agree Agree Disagree Strongly disagree

5. I feel that I do not have much to be proud of.

Strongly agree Agree Disagree Strongly disagree

6. I take a positive attitude toward myself.

Strongly agree Agree Disagree Strongly disagree

7. On the whole, I am satisfied with myself.

Strongly agree Agree Disagree Strongly disagree

8. I wish I could have more respect for myself.

Strongly agree Agree Disagree Strongly disagree

9. I certainly feel useless at times.

Strongly agree Agree Disagree Strongly disagree

³ Rosenberg, 1965

10. At time I think I am no good at all.

Strongly agree Agree Disagree Strongly disagree

11. My opinion of myself tends to change a good deal.

Strongly agree Agree Disagree Strongly disagree

12. I have noticed that my ideas about myself seem to change very quickly.

Strongly agree Agree Disagree Strongly disagree

13. Some days I have a very good opinion of myself; other days I have a very poor opinion of myself.

Strongly agree Agree Disagree Strongly disagree

14. I feel that nothing, or almost nothing, can change the opinion I currently have of myself.

Strongly agree Agree Disagree Strongly disagree

The Desirability of Control Scale⁴

Instructions: Circle one number for each of the following questions.

	Strongly Disagree							Strongly Agree		
1. I prefer a job where I have a lot of control over what I do and when I do it.	1	2	3	4	5	6	7			
2. I enjoy political participation because I want to have as much of a say in running government as possible.	1	2	3	4	5	6	7			
3. I try to avoid situations where someone else tells me what to do.	1	2	3	4	5	6	7			
4. I would prefer to be a leader rather than a follower.	1	2	3	4	5	6	7			
5. I enjoy being able to influence the actions of others.	1	2	3	4	5	6	7			
6. I am careful to check everything on an automobile before I leave on a long trip.	1	2	3	4	5	6	7			
7. Others usually know what is best for me.	1	2	3	4	5	6	7			
8. I enjoy making my own decisions.	1	2	3	4	5	6	7			
9. I enjoy having control over my own destiny.	1	2	3	4	5	6	7			
10. I would rather someone else took over the leadership role when I'm involved in a group project.	1	2	3	4	5	6	7			
11. I consider myself to be generally more capable of handling situations that others are.	1	2	3	4	5	6	7			
12. I'd rather run my own business and make my own mistakes than listen to someone else's orders.	1	2	3	4	5	6	7			
13. I like to get a good idea of what a job is all about before I begin.	1	2	3	4	5	6	7			
14. When I see a problem I prefer to do something about it rather than sit by and let it continue.	1	2	3	4	5	6	7			

⁴ Burger & Cooper, 1979

	Strongly Disagree			Strongly Agree			
15. When it comes to orders, I would rather give them than receive them.	1	2	3	4	5	6	7
16. I wish I could push many of life's daily decisions off on someone else.	1	2	3	4	5	6	7
17. When driving, I try to avoid putting myself in a situation where I could be hurt by someone else's mistake.	1	2	3	4	5	6	7
18. I prefer to avoid situations where someone else has to tell me what it is I should be doing.	1	2	3	4	5	6	7
19. There are many situations in which I would prefer only one choice rather than having to make a decision.	1	2	3	4	5	6	7
20. I like to wait and see if someone else is going to solve a problem so that I don't have to be bothered by it.	1	2	3	4	5	6	7

Aura Belief Questions

Instructions: Circle one number for each of the following questions.

1. To what extent do you think it is possible for an aura color to be lucky, in general?

1 2 3 4 5 6 7
Not possible Very possible

2. To what extent do you think the chips of your aura are more likely to land in high-numbered slots than other colors?

1 2 3 4 5 6 7
Not likely Very likely