USING SELF-AFFIRMATION TO COUNTER SELF-CONTROL DEPLETION

A dissertation submitted
to Kent State University in partial
fulfillment of the requirements for the
degree of Doctor of Philosophy

by

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CHAPTER I

INTRODUCTION

Lead me not into temptation; I can find the way myself. –Rita Mae Brown

I can resist everything except temptation. –Oscar Wilde

Although literary authors have often quipped about the ease of succumbing to temptations, the act of yielding to our desires is usually not humorous. We are frequently tempted to engage in actions that ultimately endanger our livelihood, such as eating unhealthy foods. During stressful times, many people eat food they know is less than ideal because it is simply too difficult to resist.

Lacking the self-control to resist these foods may be one of numerous reasons many Americans are at an unhealthy and even dangerous weight. Over 60% of Americans can be classified as obese or overweight (U.S. Department of Health and Human Services [USDHHS], 2000). Being an unhealthy weight can lead to physical health problems, such as heart disease, Type II diabetes, and even death (USDHHS, 2000). Controlling the quantity or quality of one’s food may be one way to maintain a healthy weight.

Self-Control

Controlling one’s food intake and adhering to a dietary plan can be classified as self-regulatory behaviors (Oaten & Cheng, 2006). Self-regulation – also referred to as self-control (Baumeister & Heatherton, 1996) – is the effortful control an individual
exercises in managing his or her emotions, thoughts, or impulses (Vohs & Heatherton, 2000). Self-control has also been defined as the purposeful corrective adjustment individuals make to meet goals (Carver, 2004). Thus, when individuals exert self-control, they are attempting to alter their automatic or routine behavioral responses in light of their goals. Examples of self-control success include achievement in college or a better ability to cope with problems, while failures of self-control include overeating or drug abuse. Furthermore, success in self-control often involves the delay of immediate gratification in lieu of pursuing one’s longer-term goals, such as studying for exams instead of partying. For individuals to engage in self-control when faced with seemingly irresistible drugs or food, they must be able to override these immediate desires for longer-term goals.

However, self-control is not always easily accomplished, and a recent conceptualization of how self-control is diminished may account for this difficulty. Muraven and Baumeister (2000) likened self-control to a muscle or strength that one has. Under this conceptualization, an individual diets successfully when he or she flexes the self-control “muscle” in the service of avoiding unhealthy foods. In some instances, an individual has enough self-control resources to successfully override impulses and engage in self-control to avoid unhealthy foods. Muraven and Baumeister (2000) describe self-control as if it were a muscle because, just like a real, physical muscle, prolonged exercise actually appears to deplete its power and weakens its ability to flex. Thus, if an individual continually demands the exercise of self-control over the day, self-control resources can become depleted. This depletion can lead to lapses of self-control, even in
other areas of the individual’s life. Because of this possibility that exercising control in one area can deplete another, eventually the individual could have difficulty self-regulating, succumbing to immediate gratification demands. This state of diminished self-control is referred to as ego depletion (Baumeister, Bratslavsky, Muraven, & Tice, 1998).

Baumeister (1998) suggested there are three important aspects to the self: the executive function, the interpersonal or social aspect of the self, and the experience of a consciousness self that is aware and reflexive. Of these three, the executive function is the aspect of the self that initiates, alters, and directs behavior. The executive function is also the aspect of the self thought to be depleted by the constant demands of self-control. Baumeister and colleagues (1998) have examined ego depletion by examining consecutive acts of self-control. In Baumeister et al. (1998), hungry participants were first asked to resist temptation by eating radishes instead of chocolate placed before them, and then they were asked to perform a frustrating puzzle-solving task, where persistence would require further self-control. The ego depletion hypothesis of self-control suggests that since an individual first used self-control resources to eat radishes instead of chocolate, she should perform poorly on the subsequent puzzle-solving task. A different hypothesis about self-control, one that regards self-control as a skill one learns, or alternatively, as a knowledge structure, would make alternative predictions that the initial self-control task would not alter performance on the subsequent task or increase performance, respectively. The ego-depletion hypothesis was supported, however, as participants who resisted the sweet-smelling chocolate were more likely to quit the puzzle-solving task.
Baumeister et al. (1998), drawing partly upon these results, proposed that self-control might occur in limited quantity for many different types of self-control. Further research on a variety of behaviors (writing counter-attitudinal essays, emotional suppression) confirmed this, suggesting that there is some internal self-resource that is commonly taxed when people engage in self-regulatory behaviors. This depletion occurs regardless of the specific nature of the self-regulatory behavior. Thus, it appears that the one aspect of the self that is responsible for volitional behaviors has a strength component.

Similar to Baumeister’s model of the self, mentioned above, Steele (1988) proposed a self-system that also includes reflexivity, such that it is constantly explaining itself to itself. The purpose of these explanations, or rationalizations, is “to maintain a phenomenal experience of the self—self-conceptions and images—as adaptively and morally adequate, that is, as competent, good, coherent, unitary, stable, capable of free choice, capable of controlling important outcomes, and so on” (Steele 1988, pp. 262). Steele’s conceptualization of the self contains both awareness and control aspects. Steele’s conceptualization of the self can be used to also understand how self-control failure occurs in individuals and why this self-control failure may lead to further health behavior problems. For instance, if a woman skipped a yoga class, according to Steele, she could easily explain, or rationalize, why she skipped yoga class (“I’m too busy with my family this week”). This rationalization of her behavior allows this individual to still see herself as a competent, good person even in the face of self-regulatory failure. Thus, to protect the integrity of the self, there is a powerful, positive motive for individuals to
think highly of themselves and defend their actions.

Originally, Festinger (1957) proposed that individuals feel defensive concerning certain acts because of the inconsistency they display—i.e., they are threatened when their behavior (skipping yoga class) does not align with their concept of what it is to be a good person (exercising regularly). According to Festinger, then, the only way an individual can restore her self-worth is by employing either cognitive (in the way of rationalizations or denials) or behavioral change. Thus, every time a person experiences dissonance caused by some of his or her behaviors, that person would need to either change the behavior or change attitudes about the behavior to reduce feelings of defensiveness.

However, millions of Americans continue to fail to engage in self-regulatory behaviors that would allow them to lead healthy lives and, according to Festinger, should either engage in rationalizations, denials, or behavior change to restore their feelings of self-worth. To explain why so many individuals continue to engage in behaviors that should cause dissonance, Steele (1998) proposed that it is not the inconsistency itself but rather the threat that that inconsistency poses to one’s self-integrity that makes individuals defensive. With the copious amounts of health information presented to people on a daily basis, it is unlikely that individuals who engage in risky healthy behaviors are able to continually rationalize their dissonance-causing choices in a convincing manner. Rather, Steele (1998) suggests that individuals can restore their threatened self-integrity by instead affirming another valued aspect of the self— one independent of the aspect threatened by their unhealthy choices. Thus, the woman would
not need to start attending yoga class again to re-affirm her feeling of self-worth or even attempt to tell herself that yoga is not a healthy practice after all. Rather, she would only need to affirm another valued aspect of herself, for example, her motherhood. Affirming valued aspects of the self, called self-affirmation, allows the individual to re-confirm her feelings of self-worth. To not feel defensive about the self-control failure, the woman can affirm that she is a fantastic mother, and this will restore her feelings of self that she is a good, competent person without having to change the inconsistency-producing behavior—her exercise habits.

**Self-Affirmation Theory**

In his self-affirmation theory, Steele (1998) proposes that individuals maintain or restore their self-integrity by affirming a valued aspect of the self in the face of self-threatening information (see McQueen & Klein, 2006). Prior research has used different manipulations to affirm participants, such as having participants rate their personal values on a value-scale (Steele & Liu, 1983) or write a short essay about a personal value (Sherman, Nelson, & Steele 2000). These affirmation manipulations boost the individuals’ self-resources by allowing them to re-affirm that they are moral, good, and competent.

Research has confirmed that, in many cases, self-affirmations can allow individuals to better regulate their thoughts and behaviors. Self-affirmations have allowed people to respond to information less defensively and less critically, which allowed them to then change their attitudes (Cohen, Aronson, & Steele, 2000). In Cohen et al. (2000), self-affirmed participants were less critical of a scientific report on capital punishment.
that contradicted their individually-held beliefs. Self-affirmed participants were also more likely to change their attitudes toward capital punishment than non-self-affirmed participants. Self-affirmation allows people to read threatening information less defensively as they do not have to worry as much about the threat to the self that this information presents.

The ability of self-affirmation to reduce defensive processing is one reason that self-affirmation theory also interests health behavior researchers. Self-affirmation theory has been shown to decrease the defensive processing of threatening health information (Harris, Mayle, Mabbot, & Napper, 2007). Self-affirmation can influence the regulation of defensive processing, countering automatic reflective responses in thoughts. Reducing these defensive processes can help lead to intentions to change behaviors, as many recent studies have demonstrated (Reed & Aspinwall, 1998; Sherman, Nelson, & Steele, 2000). In Armitage et al. (2008), adult smokers who completed a self-affirmation task before reading an antismoking leaflet were more likely to accept this antismoking message than adult smokers in the control condition. In this study, behavior was measured by whether or not individuals took a leaflet containing more information about quitting smoking. Acceptance of the antismoking message also mediated the relationship between self-affirmation and intention and behavior. These results suggest that while defensive processing of a threatening health message may limit the effectiveness of health behavior change interventions, self-affirmation allows one to accept the information presented without being defensive. Without these defenses raised, self-affirmed individuals may be more open to act in ways that normally would threaten their self-integrity.
In Armitage et al. (2008), risk also moderated the effects of self-affirmation on intentions, such that self-affirmed heavier smokers were more likely to accept the message and intend to quit smoking than non-affirmed heavier smokers. It has long been a conundrum to researchers how to get those most at risk to engage in behavior change, for it is often those for whom the threatening health information is most relevant who are least likely to be persuaded by this information (Liberman & Chaiken, 1992). Another study found that self-affirmation decreases defensive responding to threatening health information about type 2 diabetes. Self-affirmed high-risk individuals were more likely to click a link about testing for type 2 diabetes than non-self-affirmed high-risk individuals (Van Koningsbruggen & Das, 2009). Similarly, at-risk participants’ decrease in message derogation was the mediator between self-affirmation and intentions. Together these findings suggest that self-affirmation increases message acceptance, allowing those individuals who need the message the most to read the threatening health information instead of focusing on the implications of the health message to their self-integrity.

These studies by Van Koningsbruggen and colleagues (2009) and Armitage et al. (2008) demonstrate that self-affirmation can have a powerful influence on the thoughts and reactions of individuals in regard to threatening health information. However, these two studies only had proxies for actual health behavior change in the form of taking a pamphlet or clicking a link. Few studies have examined whether individuals can change their behavior following a self-affirmation manipulation.

There has been two successful demonstrations of health behavior change following a self-affirmation manipulation (Epton & Harris, 2008; Logel & Cohen, 2012).
In this study, researchers postulated that past attempts to change health behaviors after self-affirmations failed because researchers were attempting to change behaviors that “require a range of physiological, lifestyle, and social adjustments that are not necessarily amenable to personal control” (pp. 747). For example, prevention behaviors, such as quitting smoking or drinking, may require more lifestyle changes (changing social settings or even social network of friends) than promotion behaviors, such as improving exercise regimes or diet. In Epton and Harris (2008), the researchers asked participants to consume more fruits and vegetables each day, highlighting the ease of doing so by suggesting tips on how to increase intake. A week after the self-affirmation manipulation, self-affirmed participants consumed more portions of fruits and vegetables than non-self-affirmed participants. In a similar study, Logel and Cohen (2012) found that two months after a self-affirmation manipulation, female participants had lower weights and smaller waists than female participants who had not completed a self-affirmation manipulation.

Although the exact mechanisms behind self-affirmation influencing health behavior change are unknown, researchers have suggested several explanations as to why using self-affirmation to increase self-regulatory health behaviors is a fruitful endeavor. Self-affirmations should improve people’s ability to self-regulate their physical health behaviors by boosting self-resources. Self-affirmation acts as a resource for the self, giving individuals an overall boost in resources available to them and allowing them to confront threatening health information better (Reed & Aspinwall, 1998). In Reed and Aspinwall (1998), individuals who were self-affirmed also reported higher levels of perceived control over reducing caffeine consumption compared to non-self-affirmed
participants. By having individuals think about an important aspect of their self, this task should remind individuals of aspects or resources that are available to them when facing threats and, thus, self-affirmed individuals may feel as though they have more resources for coping with possible threats to their self. So when confronted with these stressful situations, self-affirmed individuals may be better abled than non-self-affirmed individuals to rely on their boosted self-system to counteract the threatening situation.

If self-affirmation boosts self-resources, then, self-affirmations should allow individuals to overcome situations when individuals normally lack these self-resources. For example, as discussed earlier, individuals often fail at acts of self-control immediately following other self-control tasks (Muraven, Tice, & Baumeister, 1998). Self-affirmations should then allow individuals to have better self-control when self-control might normally fail. One is most likely to succumb to the temptation of the double-chocolate cupcake when one has recently taxed self-control resources, say, by not yelling at her children. Since self-affirmation boosts self-resources, one should be less likely to experience the effects of self-control depletion and thus be less likely to eat that cupcake. So, if an individual has refrained from yelling at her children, she would likely later fail to engage in self-control and eat a cupcake. However, if after engaging in the first self-control behavior (not yelling), she was able to restore her overall sense of global self-worth, then she may be less likely to succumb to failure at a later self-control behavior (eating cupcakes).
Self-Affirmation and Self-Control

The most direct evidence suggesting that self-affirmation is a viable strategy for improving people’s ability to overcome self-control depletion appears in recent research examining self-control and self-affirmation (Schmeichel & Vohs, 2009). Schmeichel and Vohs (2009) reasoned that since self-affirmation may increase one’s self-resources after he or she is depleted in various situations involving self-control, self-affirmation may be a universal self-control booster.

Participants were first asked to complete either a self-control depleting task or a control task. Participants completed a value-based self-affirmation writing task or a control writing task. Following this self-affirmation manipulation, participants then completed a subsequent self-control task. Results support that self-affirmation can boost self-control such that initial self-control efforts undermined pain tolerance on the subsequent self-control task, except for those individuals who had self-affirmed (Schmeichel & Vohs, 2009). Self-affirmed, depleted self-control participants were able to persist longer on the subsequent self-control task than non-self-affirmed, depleted participants.

Possible Mediators

Schmeichel and Vohs (2009) hypothesized that self-affirmations might replenish depleted self-control by changing how individuals subjectively understand, or construe, the situation at hand. Individuals can construe a situation in broad, abstract terms or in specific, concrete terms. Broad, abstract explanations of defining a behavior or thoughts whereas lower levels of construal are narrow, concrete explanations of events or
thoughts. For example, an individual can construe the behavior of eating as “getting nutrition,” which is a higher level of mental construal, or “chewing and swallowing,” which is a lower level of mental construal (Vallacher & Wegner, 1989). Action identification theory (Vallacher & Wegner, 1987) and construal level theory (Fujita, Trope, Liberman, & Levin-Sagi, 2006) both suggest that it is these higher level mental construals that are used more often by individuals to define their global goals and values.

Self-control researchers (Fujita et al., 2006) examined whether acting in accordance with higher level construals led to greater control. Across six different studies, construal levels were manipulated and high level construals, as compared to low level construals, led to stronger intentions to exert self-control and greater physical endurance. Thinking of events and aspects of life in higher-level terms seem to allow individuals to sustain self-control by putting more focus on primary, global goals instead of being distracted by secondary, local goals. This finding helps to explain why self-affirmations can actually overpower the harmful rationalizations spoken of above in the context of Steele’s work. While the rationalizations are often ad hoc and situational, self-affirmations are global.

Thus, when individuals self-affirm, they are affirming their global self-worth and competence in the face of threatening information. So far, self-affirmations have been conceptualized as a process that allows the self to re-affirm important aspects; however, Wakslak and Trope (2009) suggest that not only does self-affirmation re-affirm one’s important values but it also allows one to think about the self in terms of its most central features. Thus, self-affirmation allows individuals to focus on primary, global aspects of
the self instead of construing events in a specific, concrete fashion. This reasoning relates to research on self-affirmation that suggests that self-affirmations are successful in reducing defensive biases due to affirming global self-integrity (Sherman & Cohen, 2002).

In a series of studies, Wakslak and Trope (2009) investigated how individuals affirm themselves in terms of level of construal, and whether self-affirmed participants would demonstrate high-level mental construals. In one study (Study 4), participants first completed a self-affirmation value-based essay-writing task. After this task, participants then completed the Gestalt Completion Task (GCT) and the picture completion sub-test of the Wechscler Intelligence Scale of Children. The GCT asks participants to identify fragmented pictures, whereas the picture completion task has participants identify missing items in a series of pictures. High-level construals have been shown to increase performance on the GCT and decrease performance on the picture completion task. Self-affirmed participants scored higher on the GCT as compared to non-self-affirmed participants and self-affirmed participants also scored lower on the picture completion task as compared to non-self-affirmed participants, suggesting that self-affirmation does enable higher levels of mental construal (Wakslak & Trope, 2009).

There is further evidence that a high level of mental construal is a key mechanism responsible for explaining why self-affirmation is a self-control booster. In Schmeichel and Vohs (2009, Study 4) self-affirmation was manipulated as either a high-level construal self-affirmation condition or a low-level construal self-affirmation condition. To increase high-level construal, participants indicated their number one value at the
bottom of the page and then, moving upward, indicated four answers, one answer in each box, as to why they pursued this value. To increase low-level construal, participants indicated their most important value at the top of the page and then moving down the sheet of paper indicated how they pursue this goal. Before participants completed this self-affirmation manipulation, they were asked to do a writing task for which half of the participants had no restrictions and the other half had to control their writing by not using certain letters, a common task used to deplete self-control. Then participants completed the self-affirmation manipulation followed by a self-control measure on the computer that involved a delay of gratification task. Only high-level self-affirmation increased self-control on the delay of gratification task, regardless of prior levels of control.

Together these findings (Schmeichel & Vohs, 2009; Wakslak & Trope, 2009) suggest that self-affirmation can help counteract self-control failure and may do so by enabling high-level mental construal. Thus, self-affirmation may help individuals to “see the big picture,” allowing self-affirmed individuals to focus on primary goals rather than becoming distracted by secondary goals. Based on recent work with self-affirmation (Schmeichel & Vohs, 2009) and work done primarily with self-control (Fujita et al., 2006), it is likely that self-affirmations may counter self-control failures, as self-affirmations can boost the self-resources on which individuals rely and also allow individuals to examine stressful situations in a different light.

Recent work in the fields of self-affirmation and self-control disagrees on whether positive mood may be a possible explanation as to why self-affirmations may counter self-control depletion. In self-affirmation studies, self-affirmation manipulations do not
put individuals in more positive moods, and positive mood does not account for self-affirmation effects (Napper, Harris, & Epton, 2009; Steele & Liu, 1983). However, research on the role of mood in the self-control literature has been mixed. Negative mood has been suggested to decrease motivation to complete self-control tasks whereas positive mood may increase self-control abilities (Fishbach & Labroo, 2007). Also, positive mood can counteract self-control depletion (Tice, Baumeister, Shmueli, & Muraven, 2007). Other research on mood and self-control has shown no correlation between the two variables (Muraven, Collins, & Nienhaus, 2002; Muraven & Slessareva, 2003). Also, in Schmeichel and Vohs (2009), they compared the effects of self-affirmation manipulation and a separate positive mood induction to self-control functioning. They found that self-affirmations and positive mood had dissimilar effects on self-control and that positive mood could not explain the self-affirmation effect. Therefore, the hypothesis for the present study was that mood would not account for the proposed link between self-affirmation and self-control depletion.

**The Present Study**

In two studies, self-affirmations were examined to understand if they could counter the effects of self-control depletion in the context of a health-relevant behavior – self-control of eating behavior. Hypotheses were tested in both a laboratory-based study (Study 1) and a daily diary (Study 2). The aim in both studies was to examine whether individuals with depleted self-control were better able to exercise self-control over subsequent eating when they were self-affirmed as opposed to not self-affirmed. Study 1 was a laboratory-based study examining the question of whether self-affirmation could
counter self-control depletion in the area of health behaviors, specifically eating. Study 2 was a longitudinal study examining whether self-affirmations could counter self-control depletion, specifically examining if self-affirmation enabled restrained eaters from falling prey to self-control demands.

Thus, the following hypotheses were investigated:

1. Consistent with prior work (Hofmann, Rauch, & Gawronski, 2007; Vohs & Heatherton, 2000), the first hypothesis was that initial self-control exertion, in the form of emotional suppression, would lead to subsequent self-control depletion, as measured by greater consumption of food.

2. The second hypothesis was that self-affirmations would counteract self-control depletion, enabling depleted self-control participants to better succeed on the subsequent self-control task.

3. Prior work on self-affirmation suggests that construal level may be one mechanism responsible for the effectiveness of self-affirmation manipulations in countering self-control depletion (Wakslak & Trope, 2009), such that self-affirmations enable one to think of events in a more abstract, global context. In Study 1, construal levels were measured to examine whether higher construal levels could account for the hypothesized linkage between self-affirmation and self-control. In Study 2, construal levels were assessed to examine whether following affirmation, individuals were thinking about behaviors using a higher-level of construal and if this mediated the relationship between self-
affirmation and calories consumed.

4. Since mood has been shown to have no effects on self-affirmation but conflicting findings in relation to self-control, it was hypothesized that mood would not account for the relationship between self-control and self-affirmation and food consumed.
CHAPTER II

STUDY ONE

The first study examined in a controlled laboratory setting whether self-control depleted individuals who were trying to restrain their eating were successful at refraining from eating tempting snacks after being self-affirmed. The sample consisted only of restrained eaters who were female. The Dietary Restraint Scale (Herman & Polivy, 1980) was used to identify individuals who are controlling their food intake and is a reliable measure for female restrained eaters (Polivy, Herman, Howard, 1988). Thus, the sample consisted only of female participants who were already attempting to restrain their food intake.

Method

Participants and Design

Ninety-seven undergraduate participants were randomly assigned to the conditions of a 2 (self-control depletion vs. non-depletion) x 2 (self-affirmation vs. non-self-affirmation) experimental design in exchange for course participation credit. Data was discarded from ten participants who either did not consume any food during the taste-testing task or consumed more than 3 SD’s above the mean worth of food. Thus, the final sample was 87 participants. Eight-three participants reported their age ($M = 20.89$, $SD = 6.00$), with a range of ages from 18-49. Eighty participants reported their ethnicity, with
the majority of participants being Caucasian \((n=60)\) or African American \((n=11)\). See Tables 1 and 2 for the breakdown of demographics and correlations for variables in Study 1.

**Procedure**

Participants enrolled in the study using Kent State’s Sona-Systems. Participants came to the laboratory and were run individually. The research assistants explained that the study concerned “The Role of Emotions on Taste Perceptions” and would consist of an emotion task and a taste perception task. Once the researchers obtained informed consent, participants began the emotion task of the study: they watched a short, emotional clip of a movie. To manipulate self-control depletion, half of the participants were randomly assigned to suppress their emotions. The emotion suppression task (Gross & Levenson, 1997) instructed participants to suppress any feelings that arose while watching the clip. Those in the non-depletion condition were told to let any emotions flow while watching the clip.

Immediately following the self-control depletion manipulation, participants answered manipulation check questions for the self-control depletion task and then completed the self-affirmation task. Participants were randomly assigned to either the self-affirmation condition or the non-self-affirmation condition. After five minutes, participants were then allowed to continue on with the other questionnaires, which included the self-affirmation manipulation check, a mood questionnaire, and the Behavioral Identification Form (Vallacher & Wegner, 1990).
Table 1

*Descriptive Statistics for Study 1 Variables*

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<tr>
<td>European American</td>
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<tr>
<td>African American</td>
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<tr>
<td>Hispanic American</td>
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<tr>
<td>Asian American</td>
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<td>Other (including multi-racial)</td>
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<td><strong>Grams of food consumed</strong></td>
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<td><strong>Behavioral Identification Scores</strong></td>
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Table 2

*Bivariate Correlations for Study 1 Variables*

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<td><strong>1 - Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2 - Grams of food consumed</strong></td>
<td>-.08</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>3 - Dietary Restraint Scores</strong></td>
<td>.11</td>
<td>-.18</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>4 - Behavioral Identification Scores</strong></td>
<td>-.27</td>
<td>-.11</td>
<td>-.05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>5 - Positive Affect</strong></td>
<td>.23*</td>
<td>.15</td>
<td>-.15</td>
<td>-.30**</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>6 - Negative Affect</strong></td>
<td>.01</td>
<td>.004</td>
<td>.10</td>
<td>.08</td>
<td>-.15</td>
<td></td>
</tr>
</tbody>
</table>

*p < .05
**p < .01
After these questionnaires were completed, the researchers told the participants that it was now time for the taste testing phase of the study. Participants were asked to rate a few products (potato chips, M&Ms, and skittles) on a variety of dimensions. Participants were told to take 5 minutes to taste the food and rate each food. They were explicitly told that they needed to eat at least one of each item and that the experimenter would check back after five minutes. After five minutes, the experimenter re-entered the room and handed a final packet of questionnaires to the participant. Participants answered a series of questions concerning their current eating habits and provided demographic information.

After participants completed these questionnaires, the experimenter thanked them for their time. Participants were debriefed via email after all participants completed the study. After each participant, the amount of food that was left was weighed as an indicator of how much each participant had consumed during her experiment time.

**Experimental Manipulations**

**Self-Control Depletion Manipulation.**

To manipulate levels of self-control depletion, participants watched a short-film clip from the movie *The Champ* (Zeffirelli, 1979). Both Gross and Levenson (1997) and Rottenberg, Ray, and Gross (2007) suggest using a short 2 minute 51 second clip from *The Champ* to elicit sadness. This short scene shows a father dying while his son is watching. *The Champ* is a fairly reliable method of increasing sadness in participants (Gross & Levenson, 1997). Using the emotion suppression task as employed by Gross
and Levenson (1997), half of participants were randomly assigned to remain completely neutral by suppressing any feelings that arose while watching the movie clip. By suppressing emotions, this engaged participants in the self-control of their emotions, causing more self-control depletion. Those participants in the non-depletion condition were told to let any emotions or feelings flow while watching the movie clip. This emotional suppression self-control manipulation has been used to manipulate levels of self-control (Hofmann, Rauch, & Gawronski, 2007). There is no direct measure of self-control depletion (Shmueli & Prochaska, 2009), so research uses indirect measures by measuring performance on a subsequent self-control related task. In Hofmann et al. (2007), for example, self-control levels were tested afterwards on a task that required restrained eaters to refrain from eating tempting foods. Participants in the suppression condition were suggested to have self-control depletion as evidenced by their inability to resist eating tempting foods. Based on these prior findings (Hofmann et al., 2007; Vohs & Heatherton, 2000), this emotion suppression task was utilized as a self-control depletion manipulation. To ensure that participants either suppressed or expressed their emotions, three manipulation check questions asked how easy it was to suppress their feelings, express their feelings, and how successful they were at controlling their feelings.

**Self-Affirmation Manipulation**

To manipulate self-affirmation, a common essay writing task was employed (Sherman et al., 2000). In this task, all participants were asked to rank a list of 11 common values (Allport, Vernon, & Lindzey, 1960). After ranking these values, half of participants were randomly assigned to write a self-affirmation essay, a short essay on
why their number one ranked value is of importance to them. The other participants wrote the non-self-affirmation essay, a short essay on why their least ranked value may be of importance to someone else. Participants wrote for five minutes. After five minutes, participants answered three manipulation check questions that were assessed on 6-point Likert Scale from “Strongly Disagree” to “Strongly Agree” whether or not the value they had just wrote about had influenced their life, was important, and their level of care concerning the value.

**Measures**

**Dietary Restraint Scale**

Participants were screened using the Dietary Restraint Scale (DRS), a 10-item scale by Herman and Polivy (1980). The DRS identifies individuals who are controlling their food intake. As recommended by Polivy, Herman, and Howard (1988), scores above 16 were identified as restrained eaters and were used in all analyses. The average DRS score was 19.63 for the sample ($SD = 2.70$), with a range from 16-27.

**Mood Questionnaire**

The Positive and Negative Affect Scale (PANAS; Watson & Tellegen, 1985) is a 10-item questionnaire with positive affect and negative affect subscales. Positive affect is a state of high energy and pleasurable mood, whereas negative affect consists of general distress. Participants rated how they feel “right now at this present moment” on a 5-point Likert subscale ranging from 1 (“very slightly or not at all”) to 5 (“extremely”). Watson, Clark, and Tellegen (1988) showed the PANAS subscales to have good internal
consistency and in the present study the reliability of the scale was good ($\alpha = 0.86$ for positive subscale; $\alpha = 0.71$ for negative subscale).

**Behavioral Identification Form**

The Behavioral Identification Form (BIF; Vallacher & Wegner, 1989) is a 25-item measure that lists a behavior followed by alternate ways of construing the behavior. One alternative is of lower mental construal and the other of higher mental construal. For each behavior (“making a list”), the participant chooses between the lower level construal (“writing things down”) or the higher level construal (“getting organized”). Following Fujita and Roberts (2010), a 7-point Likert Scale was used. The scale formed a single dimension that had good internal consistency ($\alpha = 0.82$).

**Demographics**

This questionnaire asked the participants to report their age and race/ethnicity for demographic purposes.

**Taste Preference Questionnaire**

Participants were asked to taste test three different foods: potato chips, M&Ms, and skittles. Participants were instructed to taste each of the three products and rate each of them. Participants rated the three food products on a variety of dimensions such as tastiness, naturalness, healthiness, sweetness, and product look. Each of these ratings were made on a 1 (“not at all”) to 5 (“very”) Likert Scale. Similar questions and scales have been used in recent studies of dietary self-control (Hofmann et al., 2007).
**Food Consumption**

The plates of food were weighed before participants entered the laboratory. Food consumption was determined after participants left by subtracting the post-consumption weight from the initial pre-consumption weight.

**Results**

**Manipulation Checks**

Following the self-control depletion manipulation, participants were asked three questions concerning their following of manipulation instructions. Participants were asked how easy it was to suppress their feelings, express their feelings, and how successful they were at controlling their feelings. There were no significant differences between the two self-control conditions on the question of how easy it was suppress feelings, \( t(85) = -1.19, p = .118 \). There was a significant difference between the two self-control conditions on how easy it was to express feelings during the film clip, \( t(85) = 1.95, p = .027 \). There was also a significant difference in self-rated success of controlling feelings, \( t(78) = 3.61, p = .0003 \).

Participants also answered three statements following the self-affirmation manipulation to ensure successful completion of the self-affirmation manipulation. The statements were probing to see if the value participants had just written about influenced their life, was an important part of who they are, and if they cared about the value. There were significant differences on all three statements between the two self-affirmation
conditions. Self-affirmed participants more strongly agreed with all three statements than non-self-affirmed participants, $p's < .0001$.

**Total Grams Consumed**

For the main hypotheses (Hypothesis 1 & 2) that initial self-control exertion will cause a decrease in the subsequent self-control task of restraining from eating, unless participants are self-affirmed, a 2 (non-depleted vs. depleted self-control) x 2 (self-affirmation vs. non-self-affirmation) analysis of variance (ANOVA) on eating (grams consumed) was conducted and there was a significant interaction between the two factors, $F(1, 86) = 9.93, p = 0.002$. Neither of the main effects for self-affirmation condition and self-control condition were significant, $p's > .10$. Thus the first hypothesis, that depleted self-control participants ($M = 21.8, SD = 15.75$) would consume more grams of food than non-depleted participants ($M = 20.70, SD = 15.72$) was not supported, $t = .32, p = .374$.

To test for Hypothesis 2, results of this ANOVA for a significant interaction were examined. Planned comparisons were expected to show that in the depleted self-control condition, self-affirmed participants consumed fewer grams of food than non-self-affirmed participants. Depleted self-control, self-affirmed participants ($M = 16.89, SD = 10.98$) did consume fewer grams of food than non-self-affirmed participants ($M = 24.56, SD = 17.44$), $t(48) = 1.69, p = .0493$. In the non-depleted condition, differences between self-affirmed and non-self-affirmed participants were not expected. However, non-depleted, self-affirmed participants ($M = 26.48, SD = 16.78$) consumed significantly more
grams of food than non-depleted, non-self-affirmed participants ($M = 13.13, SD = 10.49$), $t(35) = -2.79, p = 0.004$. See Figure 1 for results of this interaction.

**Mediational Analysis for Construal Levels**

Hypothesis 3 suggests that construal levels may help explain why self-affirmed participants consumed fewer grams of food. Specifically, following self-affirmation, self-affirmed participants should indicate higher levels of construal and this may explain why these participants eat less food. Mediation was tested using the bootstrap product-of-coefficient test (Lockwood & MacKinnon, 1998). To test mediation using this method, bootstrapping is conducted on the sample, which treats the sample as a population and randomly samples and replaces from within that sample. Using the bootstrapped estimates of standard errors, the product of the coefficient $\alpha$ (the relation between the product of self-affirmation and self-control to the mediator) and $\beta$ (the relation between the mediator and amount of grams consumed) are multiplied and this mediated effect is divided by the bootstrap standard error of the mediated effect to yield a $z$-score. Using this $z$-score, a conclusion can be reached whether the mediation effect is significant (see Lockwood & MacKinnon, 1998). To test this hypothesized mediation, a 5000 bootstrap resample with 95% confidence interval was used. Contrary to the hypothesis, construal levels did not mediate the relationship between the product of self-affirmation and self-control to overall grams consumed, $\beta = .02, B = .26, CI = -.46 - .62, p > .10$. See Figure 2 for the results of this mediational analysis.
Figure 1. ANOVA Results for Study 1
Figure 2. Mediational Analyses for Construal Levels for Study 1
Mediational Analysis for Mood

To examine whether mood can explain the relationship between self-affirmation, self-control depletion and food consumption, the bootstrap product-of-coefficient test was once again used (Lockwood & MacKinnon, 1998). A 5000 bootstrap resample with a confidence interval of 95% was used. Positive mood was significantly predictive of overall grams consumed, $t = 2.11, p = .0381$. Participants reporting a more positive mood consumed more grams of food. However, positive mood did not mediate the relationship between the product of self-affirmation and self-control to overall grams consumed, $\beta = -.75, B = .53, CI = -1.99 - .04, p > .10$. See Figure 3 for the results of this mediational analysis. Similarly, negative mood was not a significant mediator, $\beta = -.003, B = .16, CI = -.41 - .28, p > .10$. See Figure 4 for the results of this mediational analysis. Thus, the hypothesis that mood would not account for the relationship between self-control and self-affirmation to food consumed was supported.

Study One Discussion

A simple self-affirmation manipulation allowed some restrained eaters, when put in a tempting situation, to limit consumption of junk food. Thus, under conditions of low self-control resources, affirmation may help people maintain health behavior goals.

However, self-affirmation appeared to backfire among those who were not self-control depleted. Under conditions of low threat or self-control demands, self-affirmation may breed overconfidence (Brinol et al., 2007). Brinol et al. (2007) examined the effects of self-affirmations on persuasion and found that depending upon when self-affirmations are administered, self-affirmations have differing effects on how individuals respond to
Figure 3. Mediational Analyses for Positive Mood for Study 1

Figure 4. Mediational Analyses for Negative Mood for Study 1
persuasive information. Specifically, when self-affirmation precedes persuasive information, the affirmation increases a person’s confidence, which in turn decreases deliberation of the information. Brinol et al. (2007) suggest that self-affirmation may validate one’s sense of self, resulting in an increase in self-confidence. In the present study, affirmation among non-depleted participants may have led participants to become overconfident in their abilities and momentarily stop tracking their food consumption.

Confidence in health goals as a mediator was not tested, so this is only speculation. As for the mediators that were examined, mood did not account for why self-affirmations counteract self-control depletion. This non-significant finding was expected and adds to a long list of research that indicates self-affirmations do not simply increase an individual’s positive mood (Cohen et al., 2000; Harris & Napper, 2005; Schmeichel & Vohs, 2009). The other proposed mediator, construal levels, did not mediate the relationship of self-affirmation and self-control on the subsequent self-control task. This non-significant finding is in contrast to other research that has shown that mental construal level helps to explain how self-affirmations counter self-control depletion (Schmeichel & Vohs, 2009). More research is needed to understand if self-affirmations consistently increase construal levels, or if only for certain tasks.

Of course, controlling or expressing emotions to a short movie clip and refraining from eating food in a laboratory setting are tasks that merely mimic everyday experiences. These tasks were chosen to be as highly reflective of everyday experiences as possible, and the self-control depleted participants consumed more junk food than non-depleted participants, suggesting that these results would generalize to non-laboratory
settings. In a non-laboratory setting, individuals face even more self-threatening situations, such as having to repeatedly control emotions throughout the day, and self-affirmations may prove to be an especially useful tool to restore self-control depletion during the day. Thus, in Study 2 the hypotheses were examined in a more naturalistic setting.
CHAPTER III

STUDY TWO

This second study complemented and extended the prior study by utilizing a daily diary design to examine daily food intake of restrained eaters as well as everyday fluctuations of self-control. It was hypothesized that participants who self-affirmed would be able to counteract self-control demands and consume fewer calories than on days when they did not self-affirm. No prior research has examined self-affirmations on a daily basis nor has there been research examining self-affirmations countering self-control demands in a non-laboratory setting.

Method

Design

Participants completed daily questionnaires assessing self-control and eating behavior. Self-affirmations were manipulated within-subjects to examine whether self-affirmations can counter self-control depletion and enable individuals to consume fewer calories on self-affirmed days.

Participants

Forty-four participants were recruited for this study and given course participation credit. All participants were female and had scores above 16 on the DRS, indicating they
were restrained eaters. Thirty-nine participants reported age, ethnicity, weight, and height. Participants ranged from 18 to 25 years old ($M = 19.20, SD = 1.56$). Eighty-seven percent of participants who reported ethnicity were Caucasian. Self-reported weight and height were used to calculate body-mass index (BMI). BMI scores ranged from 18.45 to 45.34 ($M = 27.89, SD = 6.59$). See Table 3 for the demographic breakdown for Study 2.

Table 3

*Descriptive Statistics for Study 2 Variables*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean (Standard Deviation)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>19.20 (1.56)</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>European American</td>
<td></td>
<td>87.15%</td>
</tr>
<tr>
<td>African American</td>
<td></td>
<td>7.71%</td>
</tr>
<tr>
<td>Hispanic American</td>
<td></td>
<td>2.51%</td>
</tr>
<tr>
<td>Asian American</td>
<td></td>
<td>2.57%</td>
</tr>
<tr>
<td>Body Mass Index (BMI)</td>
<td>27.89 (6.59)</td>
<td></td>
</tr>
</tbody>
</table>

**Procedure**

Participants were recruited through Kent State University’s Sona-Systems, the online participant database. Participants were screened and needed to be female, restrained eaters with Wi-Fi capable-electronic devices. Eligible participants came into the laboratory. Participants were told that the study focused on the day-to-day behavior of dieters. During this initial session, participants completed a number of questionnaires and received detailed instructions on the daily diary portion of the study using their electronic
device and the applications. Each day during the daily diary portion of the study, participants reported their daily self-control demands, completed either a self-affirmation or control task, and recorded their dietary intake. At the end of the 10-day study period, participants were debriefed via email.

**The Electronic Device**

Participants used their own, personal electronic device in the form of an iPod Touch, iPhone, or iPad. These devices are personal devices that can access Wi-Fi networks. These devices run application software (apps), which are computer software programs designed to aid people to perform a particular activity. With the help of a trained research assistant, participants downloaded two applications: the Lose It! app (FitNow, Inc., 2010) and the gWhizMLA app (gWhiz, LLC, 2010). The Lose It! app is a free application that allows the individual to record food intake. Once the type of food and portion size is entered, the calories, fat, cholesterol, sodium, carbohydrate, and protein information of the food portion is instantly displayed. Participants could also set a “daily calorie budget” and see how many calories they had consumed for the day. All major foods were included in the app, along with many brand name supermarket and chain restaurant foods. All information entered in the app also synchronizes with the webpage (http://www.loseit.com/), allowing participants many options in which they could have entered their daily food intake. The Lose It! app sent all entered foods to a specified email address of the researcher the following morning. Participants were instructed to use the Lose It! app to record their daily intake but to continue to eat in their
typical fashion. Participants were instructed to enter their food intake whenever possible but to ensure that their total intake was entered every night.

The gWhizMLA app is a free app that allows the individual to answer fill-in-the-blank and multiple choice answers. After answering these questions, the answers were sent automatically back to a specified Google account. Each day participants answered a variety of questions via the gWhizMLA app. Participants were instructed to complete these daily assessments between 1:00 pm and 5:00 pm each day.

**Experimental Manipulation**

**Self-Affirmation Manipulation**

The self-affirmation manipulations were randomly assigned on a daily basis. Both the affirmation and neutral sentence stems are based on the work of Schimel and colleagues (2004). In these studies, participants were asked to complete intrinsic, extrinsic, or neutral sentence stems. Participants completing intrinsic sentence stems were more likely to show the predicted effects of self-affirmation, including increased performance on a threatening task, increased performance in the face of stereotype threat, and reduced defensive concerns in a threatening social situation. The intrinsic self-affirmation word stems were used as a self-affirmation manipulation in the current study.

For the word stems, participants, while in the self-affirmation condition, were first asked to provide a word, or valued self-definition, that described their identity or who they see themselves as a person, such as “a friend” or “a teacher”. The self-affirmation had six separate sentence stems, each sentence stem containing two-fill in the blanks (i.e.,
“Being a _______ makes me feel ______________.”). The first part of the fill in the blank sentence was filled in with their self-generated self-definition from the previous screen. The neutral sentence stems had no connection to values of the self. In the neutral sentence stem condition, participants entered one word in each sentence to describe themselves or their current behavior (“Watching television is a good way to ______________.”).

**Trait Measures**

**Dietary Restraint Scale**

Participants were screened using the Dietary Restraint Scale (DRS), a 10-item scale by Herman and Polivy (1980). The DRS identifies individuals who are controlling their food intake by assessing their attitudes toward concern for dieting and their weight fluctuations. The DRS has been identified as a useful measure for identifying restrained eaters from non-restrained eaters (Heatherton, Herman, Polivy, King, & McGree, 1988). As suggested by Polivy, Herman, and Howard (1988), scores above 16 were identified as restrained eaters and were invited to participate in the current study.

**Eating Behavior Question**

In the first laboratory session, participants were asked about their current eating habits. Participants were asked how they were currently trying to limit their food intake (calories, carbohydrates, sugars, or other).
Demographics

Participants reported their age and race/ethnicity for demographic purposes.

Self-control. Trait level self-control was assessed using the 13-item Brief Self-Control Scale (Tangney, Baumeister, & Boone, 2004). This measure assesses an individual’s ability to override inner responses and refrain from acting on undesired behaviors. Individuals with high trait self-control report fewer eating disorders (Tangney et al., 2004) and decreased saturated fat intake (de Ridder, Lensvelt-Mulders, Finkenauer, Stok, & Baumeister, 2012). Internal validity for these items was good (α = .91).

Daily Measures

Total Daily Calories

Participants reported their food intake each day. Calorie consumed per day ranged from 100 to 3205 (M = 1216.57, SD = 520.36).

Self-Control Demands

Self-control demands were assessed daily using four items. Participants were asked to rate on an 11-point scale whether they had had to regulate their mood, control their thoughts, deal with stress, or felt overwhelmed that day. These questions have been used previously in daily diary study examining alcohol intake and self-control demands (Muraven et al., 2005). Internal validity for these four items was good (α = .75).
Mood

Mood was assessed with a single question, asking participants to report their overall mood for the day on an 11-point Likert Scale ranging from 1 (“very bad”) to 11 (“very good”).

Construals

To guard against possible participant fatigue, each day participants received three random questions from the Behavioral Identification Form (BIF; Vallacher & Wegner, 1989). The BIF contains 25 questions with each question listing one behavior and two alternate ways to construe that behavior. Identical to Study 1, a 7-point Likert Scale was used.

Intentions

Each day participants answered a single item assessing whether the participant believed she would be successful at restraining her calories tomorrow. This item “do you plan to limit your food consumption tomorrow?” was rated on a 1 “do not plan” to 7 “plan to limit” Likert Scale. This question was included for exploratory purposes.

Results

To examine whether self-affirmations can counter daily self-control demands to decrease daily calories consumed, multi-level modeling was used to examine the main hypotheses. Multi-level modeling takes into account that these daily observations are not independent observations.
To investigate the degree to which daily calories consumed were predicted by daily fluctuations in self-control depletion (SC) and whether self-affirmations (SA) moderate this link, the following daily-level regression was specified as:

\[ \text{Total daily calories} = \beta_0 + \beta_1(\text{SC}) + \beta_2(\text{SA}) + \beta_3(\text{SCxSA}) + r \]

In this equation, daily self-control depletions were person-centered as to represent day-to-day fluctuations in self-control demands. According to Hypothesis 1, that self-control demands will lead to subsequent self-control depletion in the form of more calories consumed, the main effect of self-control depletion ($\beta_1(\text{SC})$) was predicted to be significant.

In these analyses, BMI and day of the study were covariates. Participants’ BMI was significantly related to eating more calories. Participants also ate significantly fewer calories as the study progressed. Only participants who provided at least four or more days of data were included in analyses. Thus, the analyses included 37 participants providing 292 observations.

**Total Calories Consumed**

Table 4 presents the results of the multi-level model predicting total calories consumed. Support was not found for the first hypothesis that self-control demands led to higher amounts of calories being consumed, $p = .532$. There was no relation between the self-control demands reported and calories consumed that day.

Hypothesis 2 predicted that self-affirmation would counter this self-control depletion, thus that the interaction between self-control depletion and self-affirmation ($\beta_3(\text{SCxSA})$) was predicted to be significant and negative. Support for the second
hypothesis was not found. The interaction of self-affirmation and self-control demands did not influence overall calories consumed on a day, \( p = .217 \). Interestingly, self-affirmation was related to more daily calories consumed, \( z = 2.46, p = 0.014 \).

Table 4

**MLM Results for Study 2 Main Analysis, Predicting Calorie Counts**

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>( z )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>769.87</td>
<td>255.01</td>
<td>3.02**</td>
</tr>
<tr>
<td>BMI</td>
<td>20.98</td>
<td>8.87</td>
<td>2.36**</td>
</tr>
<tr>
<td>Day of Study</td>
<td>-29.72</td>
<td>7.19</td>
<td>-4.13**</td>
</tr>
<tr>
<td>Self-Affirmation Condition</td>
<td>107.56</td>
<td>43.68</td>
<td>2.46*</td>
</tr>
<tr>
<td>Self-Control Demands</td>
<td>16.05</td>
<td>25.69</td>
<td>0.62</td>
</tr>
<tr>
<td>Self-Affirmation x Self-Control</td>
<td>-42.45</td>
<td>34.42</td>
<td>-1.23</td>
</tr>
</tbody>
</table>

Note.
*p < .05, ** p < .001

**Mediational Analysis for Construal Levels**

For Hypothesis 3, the hypothesis was that self-affirmation would enable higher level mental construals and that higher level mental construals would account for the relationship between self-affirmation and calories consumed. The effect of the interaction of self-affirmation and self-control demands on construal levels was first examined. The interaction of self-affirmation and self-control was not associated with construal levels, \( B = -0.27, p = .117 \). Construal levels was not related to daily calorie counts, \( B = 5.30, p = .471 \). The Sobel test confirmed that construal levels were not accounting for any possible
association between the interaction of self-affirmation and self-control on daily calorie counts, \( z = -.65, p = .512 \).

**Mediational Analysis for Mood**

For Hypothesis 4, the hypothesis was that mood would not account for the relationship between the interaction of self-affirmation and self-control demands and calories consumed. The effect of the interaction of self-affirmation and self-control demands on mood was first examined. The interaction of self-affirmation and self-control was associated with daily mood, \( B = -.74, p < .001 \). Next, daily mood was examined to see if it associated with daily calorie counts, controlling for the interaction of self-affirmation and self-control, BMI, and day of the study. Daily mood was not related to daily calorie counts, \( B = -3.84, p = .789 \). Since daily mood was not associated with daily calorie counts, daily mood was not accounting for any possible association between the interaction of self-affirmation and self-control on daily calorie counts. The Sobel test confirmed that daily mood was not mediating the relationship between the interaction of self-affirmation and self-control on daily calorie counts, \( z = .267, p = .800 \).

**Analyses for Examining Day of Week Effects**

To examine whether the day of the week influenced self-control and self-affirmation on caloric intake, any trends over time in eating were examined. Participants may have reacted to seeing their calorie counts in the first few days of the study and, thus, decreased their calorie counts accordingly. Thus, the magnitude of the self-affirmation and self-control interaction for the first five days of data for participants was
compared to the magnitude of that interaction for the second five days. Both interactions were non-significant. For the first five days of the study, the effect of interaction between self-affirmation and self-control on caloric intake was non-significant, $z = - .46, p = .642$. For the last five days of the study, the effect of interaction between self-affirmation and self-control on caloric intake was non-significant, $z = -1.21, p = .226$.

Also, the effect of affirmation on caloric intake was only significant when examining the first five days of data, $z = 2.09, p = .037$. Affirmation did not significantly impact caloric intake when examining the last five days of data, $z = .70, p = .485$. See Tables 5 and 6 for the results of these analyses examining day of week effects on caloric intake.

Table 5

*MLM Results for Study 2 Examining Day of Week Effects for First Five Days of Study 2*

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>$z$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>415.78</td>
<td>295.60</td>
<td>1.41</td>
</tr>
<tr>
<td>BMI</td>
<td>30.78</td>
<td>10.52</td>
<td>2.93**</td>
</tr>
<tr>
<td>Self-Affirmation Condition</td>
<td>150.08</td>
<td>71.87</td>
<td>2.09*</td>
</tr>
<tr>
<td>Self-Control Demands</td>
<td>4.91</td>
<td>46.35</td>
<td>0.11</td>
</tr>
<tr>
<td>Self-Affirmation x Self-Control</td>
<td>-30.32</td>
<td>65.30</td>
<td>-0.46</td>
</tr>
</tbody>
</table>

Note.
*p < .05, ** p < .001*
Table 6

*MLM Results for Study 2 Examining Day of Week Effects for Second Five Days of Study 2*

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Standard Error</th>
<th>z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>654.40</td>
<td>257.07</td>
</tr>
<tr>
<td>BMI</td>
<td>17.77</td>
<td>8.98</td>
</tr>
<tr>
<td>Self-Affirmation Condition</td>
<td>43.33</td>
<td>62.00</td>
</tr>
<tr>
<td>Self-Control Demands</td>
<td>22.19</td>
<td>41.92</td>
</tr>
<tr>
<td>Self-Affirmation x Self-Control</td>
<td>-66.33</td>
<td>54.83</td>
</tr>
</tbody>
</table>

Note.
*p < .05, ** p < .001

**Analysis for Examining Trait Self-control**

The primary hypotheses examined daily fluctuations of self-control and whether affirmations can serve as an intervention when individuals are experiencing dips in self-control. Self-control has also been conceptualized as trait-like, with some individuals generally having higher levels of self-control and other individuals having lower overall levels of self-control. Though no prior research has examined how self-affirmations affect trait self-control, it may be that low trait self-control individuals may benefit from self-affirmation manipulation. Specifically, low trait self-control individuals may consume fewer calories when self-affirmed as compared to high trait self-control individuals.
In these analyses, BMI and day of the study were the covariates. As trait self-control is a person-level trait, the variable was grand mean centered. The interaction between this grand mean centered variable and affirmation was not significant, \( z = -0.035, p = .726 \). Thus, trait level self-control did not interact with affirmation to affect caloric intake. Table 7 presents the results of this analysis examining the interaction of trait self-control and self-affirmation predicting caloric intake.

Table 7

*MLM Results for Study 2 Examining Trait Self-Control*

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>( z )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>786.10</td>
<td>255.01</td>
<td>3.06**</td>
</tr>
<tr>
<td>BMI</td>
<td>20.28</td>
<td>8.93</td>
<td>2.27*</td>
</tr>
<tr>
<td>Day of Week</td>
<td>-29.47</td>
<td>6.90</td>
<td>-4.27**</td>
</tr>
<tr>
<td>Self-Affirmation Condition</td>
<td>100.94</td>
<td>43.10</td>
<td>2.34*</td>
</tr>
<tr>
<td>Trait Self-Control</td>
<td>69.17</td>
<td>95.44</td>
<td>0.72</td>
</tr>
<tr>
<td>Self-Affirmation x Self-Control</td>
<td>-23.32</td>
<td>66.62</td>
<td>-0.35</td>
</tr>
</tbody>
</table>

Note.
* \( p < .05 \), ** \( p < .001 \)

**Analysis Examining BMI and Self-Affirmation on Caloric Intake**

In the main analyses, participants’ BMI was a covariate as participants’ BMI was related to consuming more calories. However, this additional analysis was conducted to examine whether affirmation and BMI would interact to affect caloric intake. Day of the
week was the covariate for this analysis. Overall, on days when participants were affirmed, participants consumed more calories than on days when participants were not self-affirmed, $z = 2.64, p = .008$. However, BMI did significantly interact with condition to affect caloric intake, $z = 2.14, p = .032$. Affirmation increased caloric intake more so for heavier participants than less heavy participants. Table 8 presents the results of this analysis.

Table 8

*MLM Results for Study 2 Examining BMI and Self-affirmation on Caloric Intake*

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>$z$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>1340.09</td>
<td>72.90</td>
<td>18.38**</td>
</tr>
<tr>
<td>Day of Week</td>
<td>-29.20</td>
<td>6.84</td>
<td>-4.27**</td>
</tr>
<tr>
<td>Self-Affirmation Condition</td>
<td>112.83</td>
<td>43.68</td>
<td>2.64**</td>
</tr>
<tr>
<td>BMI</td>
<td>13.58</td>
<td>9.48</td>
<td>1.43</td>
</tr>
<tr>
<td>Self-Affirmation x BMI</td>
<td>14.56</td>
<td>6.81</td>
<td>2.14*</td>
</tr>
</tbody>
</table>

Note.  
* $p < .05$, ** $p < .001$

*Study Two Discussion*

The aim of the second study was to examine whether self-affirmations could counter self-control depletion in a non-laboratory setting. In contrast to the results of laboratory study, this current study found that self-control demands did not increase food consumption and, also that self-affirmations did not counteract those self-control
demands to decrease consumption. Surprisingly, self-affirmations increased caloric counts.

Given that the participants in the study were reporting very low calorie counts, increasing calorie counts may not be harmful, but rather beneficial. As compared to non-affirmation days, affirmation days increased calorie counts by over 100 calories. The results from Study 2 also indicated that affirmations increased calorie counts more so for heavier participants as compared to less heavy participants. Increasing calorie counts for these participants may not be as useful as increasing calorie counts for less heavy participants. However, as suggested in Study 1’s discussion, self-affirmation may work by validating one’s sense of self and thereby increasing confidence in meeting one’s goals. Thus, for both heavier and less heavy participants, self-affirmations may increase one’s confidence that their eating habits are justified. For example, a self-affirmation for heavier participants may increase confidence that eating more calories is needed. Whereas for less heavy participants, a self-affirmation may increase confidence that eating fewer calories is the right approach to their dieting plan. Thus, the effects of this increase in self-confidence may lead to different outcomes based on how closely one’s sense of self is tied to diet or body image. Future research is needed to understand how restrained eaters construe their self and goals after an affirmation.

Similar to the laboratory study, the proposed mechanism of construal levels did not mediate the relationship between self-affirmation and self-control and caloric intake, so definitive conclusions concerning why self-affirmations increased calorie counts cannot be made. No prior studies have examined self-affirmations’ utility in countering
self-control depletion outside of the laboratory or without first directly taxing self-control, and it may be that self-affirmations restore self-control depletion only during a specific frame of time, such as immediately following self-control depletion.

Surprisingly, trait self-control did not predict calorie counts nor did it interact with the self-affirmation condition to influence calorie counts. Though some research has shown trait self-control influencing eating (Tangney et al., 2004), this effect is relatively weak, especially compared to the degree to which self-control relates to other behaviors, such as academic performance (de Ridder et al., 2012). Future research could examine the impact of self-control on self-affirmations for other behaviors that seem more strongly affected by self-control (de Ridder et al., 2012). Self-affirmations have generally been very successful in improving academic performance (Sherman et al., 2013), and increased self-control may explain how self-affirmations work to improve academic performance. However, based on the present study, self-control does not influence the effect self-affirmations have on eating in everyday life.
CHAPTER IV

GENERAL DISCUSSION

Across two studies, some support was found for the notion that self-affirmations can counter self-control depletion for restrained eaters. Specifically, in a controlled laboratory study (e.g., Study 1), self-affirmation enabled self-depleted participants to consume fewer grams of food than non-self-affirmed, self-depleted participants. Study 1, then, is the first study to support that self-affirmations may be useful when participants have low self-control resources in an applied health context. However, when examining self-affirmations’ utility outside of the laboratory (e.g., Study 2), the findings show that self-affirmations increased calorie counts. In contrast to Study 1, self-control demands did not impact caloric intake nor interact with self-affirmations to impact calorie counts.

Thus, self-affirmations are beneficial in allowing individuals to maintain their health behavior goal when individuals specifically experience low state self-control. When individuals have not directly had their self-control depleted, self-affirmations do not benefit individuals in their quest for health behavior change or maintenance. Since the proposed mechanism of construal levels did not help explain these findings, a definitive explanation cannot be put forth as to why self-affirmations are differentially effective.

Future studies should examine the role of confidence and the salience of the individual’s health behavior goal. In the first study, it may be for individuals who were
self-control depleted, self-affirmations increased confidence so that individuals could successfully maintain their goal, as normally under self-control depleted conditions, individuals would not have the self-resources to maintain this goal. On the other hand, for individuals who were not self-control depleted, self-affirmations may also increase confidence that they could successfully maintain their goal. However, since they were not depleted, they became over-confident, allowing them to consume more grams of food than they ideally would want to consume. Likewise, in Study 2, self-affirmations increased calorie counts. A self-affirmation in the middle of the day may increase confidence to a degree where one is too secure about meeting one’s health behavior goal.

In future studies, following the self-affirmation manipulation with an examination of confidence or the importance that one is placing on the health behavior goal could help elucidate whether self-affirmations increase confidence—possibly to such a degree where affirmations are detrimental. If self-affirmations increase self-confidence, then rather than targeting a self-affirmation manipulation for when self-control resources are low, it may be more useful to target these manipulations for when individuals feel particularly discouraged about their progress toward their goal.

The present studies are not without limitations. Other studies have found that construal levels mediate self-affirmation effects (Schmeichel & Vohs, 2009; Wakslak & Trope, 2009), and in the present studies, construal levels were not a significant mediator. One reason suggested for why self-affirmations may increase construal levels, is that self-affirmations allow individuals to see the “big picture,” allowing individuals to focus on primary goals, without being distracted by secondary, or less important, goals. In
Schmeichel and Vohs (2009), their self-control tasks were relatively straightforward, simple tasks—persisting in a puzzle task or a cold-pressor task. Thus, the tasks in that study were not directly tied to participants’ sense of self and likely were also not part of participants’ primary—or even secondary—goals. However, in the present studies, the self-control tasks in Study 1 were an emotional task, where participants watched a video clip of a young boy watching his father die, and the eating task. These tasks may be more likely to have connections to participants’ self, and it may shift priorities of goals rather than shifting construals of a goal. Self-affirmations, in this case, then may not shift how one understands or thinks about one’s sense of self, but rather what one is thinking about one’s sense of self. Thus, affirming an individual following an initial self-control depletion task that impacts individuals’ sense of self may not as much lead individuals to construe their self in a more abstract manner (i.e., higher levels of construal) but rather change the focus of the goals an individual has. More research is needed to understand the mechanisms of self-affirmations and whether construal levels consistently mediate the link between self-affirmations and self-control.

Another limitation of the present studies is that the self-affirmation measure used in Study 2 had not been previously used outside the laboratory (Schimel et al., 2004). Whereas this task was powerful enough to show positive self-affirmation effects in the laboratory, it may not have had the intended effects delivered in a daily setting. On self-affirmation days, participants received six fill-in-the-blank statements, meant to affirm the self. Though, since effects for the self-affirmation were found, clearly the affirmations were affecting caloric intake in some manner, but whether the standard self-
affirmation manipulations would have the same effects is unclear. Logel and Cohen (2012) found weight loss in participants two weeks after participants had completed an essay self-affirmation task. Their findings indicate that the standard essay self-affirmation task can have long-term effects on weight loss, whereas the current results from Study 2 indicate that a fill-in-the-blank self-affirmation task given more regularly has backfire effects. Future research needs to examine the most useful manner in which to deliver self-affirmations and how the type and frequency of self-affirmation manipulations may differentially impact behavior change.

Together the present two studies demonstrate that self-affirmations are not a panacea for enabling health behavior maintenance, or even for generally restoring self-control depletion. When self-affirmations have been utilized to increase knowledge, and acceptance, of health behaviors, the timing of when self-affirmations are delivered—either before or after presenting the health behavior information—has been shown to be critical in seeing the positive benefits of self-affirmations increasing acceptance of the health message (see Sherman & Cohen, 2002). Thus, it is no surprise that when utilizing self-affirmations for the maintenance of a health behavior, self-affirmations are not universally positive in their effects. The present two studies show that self-affirming individuals may have negative effects if administered when individuals have not directly had their self-control depleted.

In the original conceptualization of self-affirmations, Steele (1998) suggested that individuals feel threatened when one’s inconsistency concerning her behavior threatens one’s self-integrity. Many of the participants in the studies were not new to trying to lose
weight, and a sizeable portion of the sample in Study 2 had already been tracking their caloric intake. The day-to-day fluctuations of calorie counts may not have been as threatening to these participants, as they may have been used to constantly monitoring and evaluating their progress toward their dieting goal. Future studies could examine the utility of self-affirmations when individuals are just starting in their journey toward a new health behavior goal, as self-affirmations may be particularly beneficial when individuals feel highly threatened—and under confident—that they can meet and maintain their goals.

Millions of Americans are overweight or obese (USDHHS, 2000) and controlling the quality and quantity of food is one way individuals can try to reach and maintain a healthy weight. Thus, simple interventions that can aid individuals in this quest are important. Self-affirmations may eventually be such an aid, but the present studies suggest additional research is needed to understand when self-affirmations are beneficial in maintaining a health behavior goal and when, like in the present studies, self-affirmations may backfire in the maintenance of a health behavior goal. Understanding when delivering self-affirmations are most useful and elucidating the mechanisms of self-affirmations are needed before self-affirmations can be utilized as a strategy for aiding in the maintenance of health behavior goals.
APPENDIX A

MATERIALS FOR STUDY 1
**APPENDIX A**

**MATERIALS FOR STUDY 1**


This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to which extent you feel this way right now, that is, at this present moment. Use the following scale to record your answers.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>very slightly or not at all</td>
<td>a little</td>
<td>moderately</td>
<td>quite a bit</td>
<td>extremely</td>
</tr>
</tbody>
</table>

- _____ interested
- _____ distressed
- _____ excited
- _____ upset
- _____ strong
- _____ guilty
- _____ scared
- _____ hostile
- _____ enthusiastic
- _____ proud
- _____ irritable
- _____ alert
- _____ ashamed
- _____ inspired
- _____ nervous
- _____ determined
- _____ attentive
- _____ jittery
- _____ active
- _____ afraid
Self-affirmation manipulation

What are your personal values?

Below is a list of characteristics and values, some of which may be important to you, some of which may be unimportant. Please read carefully over this list and think about each of these values. Then, rank these values and qualities in order of their importance, to you, from 1 to 11 (“1” being the most important value to you, “11” being the least important).

Use each number only once.

_____ Artistic skills
_____ Athletics
_____ Business/earning money
_____ Creativity
_____ Independence
_____ Musical ability/appreciation
_____ Politics
_____ Relations with friends or family
_____ Religious Values
_____ Sense of Humor
_____ Spontaneity/Living life in the moment
ESSAY

What was your most important value you ranked on the previous page? (the value you ranked #1): __________________________

Please explain three reasons why your most important value is important to you. Also, provide an example demonstrating why this value is important to you.

Write as much or as little as you wish, and don’t worry about how well it’s written. Just focus on expressing your thoughts and feelings. Please do your best to write about it for the next 10 minutes.
ESSAY

What was your least important value you ranked on the previous page? (the value you ranked #11): __________________________

Please explain 3 reasons why your least ranked value might be important to someone else and provide an example as to why that value might be important to someone else.

Write as much or as little as you wish, and don’t worry about how well it’s written. Just focus on expressing your thoughts and feelings. Please do your best to write about it for the next 10 minutes.
Make a check mark to show how much you agree with each of the following statements:

1. This value or personal characteristic has influenced my life.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. This value is an important part of who I am.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. I care about this value.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Any behavior can be described in many ways. For example, one person might describe a behavior as "writing a paper," while another person might describe the same behavior as "pushing keys on the keyboard." Yet another person might describe it as "expressing thoughts." This form focuses on your personal preferences for how a number of different behaviors should be described. Below you will find several behaviors listed.

1. Making a list
   1 2 3 4 5 6 7
   Getting organized Writing things down

2. Reading
   1 2 3 4 5 6 7
   Following lines of print Gaining knowledge

3. Joining the Army
   1 2 3 4 5 6 7
   Helping the Nation's defense Signing up

4. Washing clothes
   1 2 3 4 5 6 7
   Removing Odors from clothes Putting clothes into the machine

5. Picking an apple
   1 2 3 4 5 6 7
   Getting something to eat Pulling an apple off a branch

6. Chopping down a tree
   1 2 3 4 5 6 7
   Wielding an axe Getting firewood
7. Measuring a room for carpeting
   Getting ready to remodel

8. Cleaning the house
   Showing one's cleanliness

9. Painting a room
   Applying brush strokes

10. Paying the rent
    Maintaining a place to live

11. Caring for houseplants
    Watering plants

12. Locking a door
    Putting a key in the lock

13. Voting
    Influencing the election

14. Climbing a tree
    Getting a good view

Using a yard stick
Vacuuming one's floor
Making the room look fresh
Writing a check
Making the room look nice
Securing the house
Marking a ballot
Holding onto branches
<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>15. Filling out a personality test</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Answering</td>
<td>Revealing what you're like</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>questions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Tooth-brushing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Preventing</td>
<td>Moving a brush around in one’s mouth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tooth decay</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Taking a test</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Answering</td>
<td>Showing one’s knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>questions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Greeting someone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Saying hello</td>
<td>Showing friendliness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Resisting temptation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Saying &quot;no&quot;</td>
<td>Showing moral courage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Eating</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Getting</td>
<td>Chewing &amp; swallowing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutrition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Growing a garden</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Planting seeds</td>
<td>Getting fresh vegetables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. Traveling by car</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Following a map</td>
<td>Seeing countryside</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Having a cavity filled</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Protecting your teeth</td>
<td>Going to the dentist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
24. Talking to a child
Teaching a child something

25. Pushing a doorbell
Moving a finger

Using simple words
Seeing if someone’s home
We would like to know how each of the products tastes to you. Please eat some of the product and rate it according to your tastes.

1. How *tasty* is the product?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>
   Not at all |   |   |   |   | Very Tasty |
   Tasty      |   |   |   |   |     |

2. How *natural* is the product?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>
   Not at all |   |   |   |   | Very Natural |
   Natural    |   |   |   |   |     |

3. How *healthy* is the product?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>
   Not at all |   |   |   |   | Very Healthy |
   Healthy    |   |   |   |   |     |

4. How *sweet* is the product?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>
   Not at all |   |   |   |   | Very Sweet |
   Sweet      |   |   |   |   |     |

5. Do you like how the product *looks*?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
</table>
   Not at all |   |   |   |   | Very Much |
   Looks      |   |   |   |   |     |

1. How often are you dieting?
   a. Never
   b. Rarely
   c. Sometimes
   d. Often
   e. Always

2. What is the maximum amount of weight (in pounds) that you have ever lost within one month?
   a. 0-4
   b. 5-9
   c. 10-14
   d. 15-19
   e. 20+

3. What is your maximum weight gain within a week?
   a. 0-1
   b. 1.1-2
   c. 2.1-3
   d. 3.1-5
   e. 5.1+

4. In a typical week, how much does your weight fluctuate?
   a. 0-1
   b. 1.1-2
   c. 2.1-3
   d. 3.1-5
   e. 5.1+

5. Would a weight fluctuation of 5 lbs affect the way you live your life?
   a. Not at all
   b. Slightly
   c. Moderately
   d. Very much

6. Do you eat sensibly in front of others and splurge alone?
   a. Never
   b. Rarely
   c. Often
   d. Always
7. Do you give too much time and thought to food?
   a. Never
   b. Rarely
   c. Often
   d. Always

8. Do you have feelings of guilt after overeating?
   a. Never
   b. Rarely
   c. Often
   d. Always

9. How conscious are you of what you are eating?
   a. Not at all
   b. Slightly
   c. Moderately
   d. Extremely

10. How many pounds over your desired weight were you at your maximum weight?
    a. 0-1
    b. 1-5
    c. 6-10
    d. 11-20
    e. 21+
APPENDIX B

MATERIALS FOR STUDY 2
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    b. 1-5
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    d. 11-20
    e. 21+

**Self-affirmation sentence stems.**
1. Being a ____________ makes me feel _______________________.
2. Being a ____________ reflects the way I ____________________________.
3. When I am being a ____________, I experience ____________________.
4. When I am being a ____________, I face the personal challenge of ________.
5. My enjoyment in being a ____________, comes from my own ________.
6. Being a ____________ reflects my true ____________________________.

**Neutral sentence stems:**
1. Watching television is a good way to ____________________________.
2. Sitting through a boring lecture makes me ________________________.
3. Doing chores around my house/apartment is ________________________.
4. I feel ____________________________ when I am waiting for the bus.
5. Going to the Laundromat is ________________________________.
6. Using the internet is __________________________________________.

Any behavior can be described in many ways. For example, one person might describe a behavior as "writing a paper," while another person might describe the same behavior as "pushing keys on the keyboard." Yet another person might describe it as "expressing thoughts." This form focuses on your personal preferences for how a number of different behaviors should be described. Below you will find several behaviors listed.

1. Making a list
   1 2 3 4 5 6 7
   Getting organized  Writing things down

2. Reading
   1 2 3 4 5 6 7
   Following lines of print  Gaining knowledge

3. Joining the Army
   1 2 3 4 5 6 7
   Helping the Nation's defense  Signing up

4. Washing clothes
   1 2 3 4 5 6 7
   Removing Odors from clothes  Putting clothes into the machine

5. Picking an apple
   1 2 3 4 5 6 7
   Getting something to eat  Pulling an apple off a branch

6. Chopping down a tree
   1 2 3 4 5 6 7
   Wielding an axe  Getting firewood
7. Measuring a room for carpeting
   Getting ready to remodel
   Using a yard stick

8. Cleaning the house
   Showing one's cleanliness
   Vacuuming one’s floor

9. Painting a room
   Applying brush strokes
   Making the room look fresh

10. Paying the rent
    Maintaining a place to live
    Writing a check

11. Caring for houseplants
    Watering plants
    Making the room look nice

12. Locking a door
    Putting a key in the lock
    Securing the house

13. Voting
    Influencing the election
    Marking a ballot

14. Climbing a tree
    Getting a good view
    Holding onto branches
15. Filling out a personality test
1. Answering questions
2. Revealing what you're like

16. Tooth-brushing
1. Preventing Tooth decay
2. Moving a brush around in one’s mouth

17. Taking a test
1. Answering questions
2. Showing one’s knowledge

18. Greeting someone
1. Saying hello
2. Showing friendliness

19. Resisting temptation
1. Saying "no"
2. Showing moral courage

20. Eating
1. Getting Nutrition
2. Chewing & swallowing

21. Growing a garden
1. Planting seeds
2. Getting fresh vegetables

22. Traveling by car
1. Following a map
2. Seeing countryside

23. Having a cavity filled
1. Protecting your teeth
2. Going to the dentist
24. Talking to a child
   1  2  3  4  5  6  7
   Teaching
   a child something
   Using
   simple words

25. Pushing a doorbell
   1  2  3  4  5  6  7
   Moving
   a finger
   Seeing if
   someone’s home

Using the scale provided, please indicate how much each of the following statements reflects how you typically are.

1. I am good at resisting temptation.
   1 2 3 4 5
   Not at all Very Much

2. I have a hard time breaking bad habits.
   1 2 3 4 5
   Not at all Very Much

3. I am lazy.
   1 2 3 4 5
   Not at all Very Much

4. I say inappropriate things.
   1 2 3 4 5
   Not at all Very Much

5. I do certain things that are bad for me, if they are fun.
   1 2 3 4 5
   Not at all Very Much

6. I refuse things that are bad for me.
   1 2 3 4 5
   Not at all Very Much

7. I wish I had more self-discipline.
   1 2 3 4 5
   Not at all Very Much

8. People would say that I have iron self-discipline.
   1 2 3 4 5
   Not at all Very Much
<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>9.</td>
<td>Pleasure and fun sometimes keep me from getting work done.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Not at all</td>
<td>Very Much</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>I have trouble concentrating.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Not at all</td>
<td>Very Much</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>I am able to work effectively toward long-term goals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Not at all</td>
<td>Very Much</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Sometimes I can’t stop myself from doing something, even if I know it is wrong.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Not at all</td>
<td>Very Much</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>I often act without thinking through all the alternatives.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Not at all</td>
<td>Very Much</td>
<td></td>
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</tbody>
</table>

Below you will find a list of events that may or may not have occurred to you today. If the event did not occur today, write down ‘0’. If the event occurred today, use the rating scale below to indicate how much the event meant to you or affected you.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Did Not Occur</td>
</tr>
<tr>
<td>1</td>
<td>Occurred and Not Important</td>
</tr>
<tr>
<td>2</td>
<td>Occurred and Somewhat Important</td>
</tr>
<tr>
<td>3</td>
<td>Occurred and Pretty Important</td>
</tr>
<tr>
<td>4</td>
<td>Occurred and Extremely Important</td>
</tr>
</tbody>
</table>

- 1. Spent pleasant or relaxing time with friends/date/family.
- 2. Fell behind in course work or work duties.
- 3. Had a disagreement or conflict with a friend, boyfriend/girlfriend, or family member.
- 4. Cleaned up and/or organized my living/working space.
- 5. Received a compliment on my physical appearance.
- 6. Made progress toward assignment/task that has a deadline.
- 7. Something happened that made me feel awkward or embarrassed in public.
- 8. Did something special for a friend/date that was appreciated.
- 9. Did poorly (or worse than I expected) on a school or work task (e.g., test, assignment, job duty).
- 10. Had money problems.
- 11. Had especially good interactions with friend(s) or acquaintance(s).
- 12. Did not have enough privacy.
- 13. Did well (or better than I expected) on school or work task.
- 14. Had an unpleasant interaction with someone other than a friend, boyfriend/girlfriend, or family member.
- 15. Was criticized on my school work or work duties.
- 16. Sent or received an enjoyable letter/e-mail/phone call from a friend, boyfriend/girlfriend, or family member.
- 17. Wanted to make progress on an assignment/task which has a deadline, but did not.
- 18. Attended a particularly unpleasant class or lecture.
- 19. Went out socializing with friends/date (e.g., party, club).
- 20. Had a hard time understanding or felt overwhelmed by difficult class material.
- 21. Friends were not available when I wanted to socialize.
- 22. Got caught up (or ahead) in course work or work duties.
- 23. Had problems controlling negative feelings.
- 24. Went out to eat with a friend/date.
- 25. Others did not do something that I wanted them to do.
___26. Experienced a setback in my schoolwork or career.
___27. Went to a stimulating/interesting class or lecture.
___28. Provided support to someone I care for.
___29. Pressure increased to work harder in my classes or job.
___30. Completed work on an interesting project or assignment.
___31. Others acted disinterested in something I said or did.
___32. Did some extra activity to enhance my schooling or career.
___33. Had other type of pleasant event (not listed above) with friends, family, or date. (list:___________________________)
___34. Had other type of unpleasant event (not listed above) with friends, family, or date. (list:___________________________)
___35. Had other type of pleasant event (not listed above) concerning performance at school, work, or another activity. (list:__________________________________)
___36. Had other type of unpleasant event (not listed above) concerning school work, or another activity.(list:___________)
REFERENCES
REFERENCES


McQueen, A., & Klein, W.M. (2006). Experimental manipulations of self-affirmation: A


