

**EXPLORING THE RELATIONSHIP AMONG SELF-AFFIRMATION, SELF-
CONCEPT CLARITY AND REDUCED DEFENSIVENESS TO THREATS**

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Submitted to the Graduate Faculty of
Arts and Sciences in partial fulfillment
of the requirements for the degree of Ph.D. in Psychology

University of Pittsburgh

2011

UNIVERSITY OF PITTSBURGH
ARTS AND SCIENCES

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Two studies were designed to explore the effect of self-affirmation on self-concept clarity and assess the potential mediational role of self-concept clarity in the relationship between self-affirmation and reduced defensiveness to threatening health information. It was predicted that self-affirmed participants would experience higher levels of self-concept clarity than their non-affirmed counterparts (Experiment 1). Moreover, consistent with prior research, it was hypothesized that self-affirmation would result in reduced defensiveness for people faced with a health threat relative to non-affirmed, threatened participants and to non-threatened participants (Experiments 1 and 2). Lastly, it was predicted that this relationship would be mediated by self-concept clarity (Experiments 1 and 2). In Experiment 1, 297 male and female college students wrote a self-affirming or control essay and were then exposed to a message suggesting that engaging in sexual activity increases the risk of contracting a sexually transmitted disease. In Experiment 2, 249 female college students self-affirmed in a manner that was designed to result in either low or high self-concept clarity and then read a message highlighting the link between alcohol and breast cancer risk. In both studies, defensive reactions were assessed by measuring variables such as risk perceptions, emotional responses, intentions and actual engagement in risk-reducing behavior. Experiment 1 illustrated that self-affirming did result in a small but

statistically significant increase in self-concept clarity relative to those who did not self-affirm, but not reduced defensiveness. In Experiment 2, participants who self-affirmed in a manner that resulted in low or high self-concept clarity did not differ in consistent ways. Participants who consumed the most alcohol and completed the high self-concept clarity self-affirmation in the lab reported engaging in less unhealthy behavior (i.e., consuming fewer alcoholic drinks) in the seven to ten days after their participation relative to those who completed the low self-concept clarity self-affirmation, providing evidence that self-affirmation may result in behavioral change for some groups. The theoretical and practical implications of these experiments, as well as future directions for research on the mediators of the effects of self-affirmation will be discussed.

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PREFACE

I would be remiss if I did not acknowledge the many people who supported and assisted me throughout this process. I am grateful to Bill Klein for his incredible mentorship since I entered graduate school and to John Levine for his guidance in the past several years. I have learned so much from both of you! Thanks also to my other committee members, David Creswell and JeeWon Cheong, for their valuable expertise and critiques that have improved this project. I would also like to acknowledge Peter Harris for taking the time to share his expertise on self-affirmation and answer the many questions I asked him. I am very grateful to Katie Cornelius, Kelley Jones, Rose McAloon, and Joanna Sterling, the four amazing young women who served as research assistants on these two studies and without whom it would have been virtually impossible to collect all of these data in one year! I also thank Destiny Miller, Elisabeth Ploran, Jennifer Tomlinson, and Laura Zajac for their friendship and social support throughout the dissertation process. I am incredibly grateful to my parents and sisters for their constant support. Lastly, I wish to thank Jon Chu, the most supportive husband and partner a person could be lucky enough to have.

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1.0 INTRODUCTION

Threat can come in many forms, and no individual can escape dealing with threats to the self (e.g., health threats or threats to social standing). People react in various ways when threatened (Sherman & Cohen, 2006). Unfortunately, people often react defensively to threats (e.g., Jemmott, Ditto, & Croyle, 1986, Liberman & Chaiken, 1992) rather than acknowledging the seriousness of the threat and considering ways to change their thoughts, attitudes, and behavior in order to reduce the threat. They may minimize the importance of the threat or its relevance to the self or denigrate the source of the threatening information. Unfortunately, defensive reactions to threat can pose a danger. In cases where the threat itself (rather than one's emotional reaction to it) can be reduced by behavior change, people who react defensively may avoid making such a change. For example, if a woman learns that she is at high risk of getting breast cancer, a defensive reaction of avoiding mammography could be detrimental.

One way to weaken such defensive reactions is to have people engage in self-affirmations, such as by reflecting on a personally important value. Research testing responses to many different types of threats has shown that opportunities to self-affirm reduce tendencies to devalue information and disregard its personal relevance (Harris & Epton, 2009; Sherman & Cohen, 2006). Although the literature is rife with demonstrations of this effect, what is less clear

is how self-affirmation produces these effects. Often self-affirmation manipulations are described as having people reflect positively on “who they are” (Sherman & Cohen, 2006). This notion of a clear sense of self brings to mind the construct of self-concept clarity (Campbell, 1990; Campbell et al., 1996). A series of studies are proposed here that will explore the potential mediating role of self-concept clarity in the relationship between self-affirmation and reduced defensiveness in the presence of threat.

1.1 SELF-AFFIRMATION THEORY

Self-affirmation theory (Sherman & Cohen, 2006; Steele, 1988) is rooted in two basic assumptions. The first is that when threatened, people are motivated to preserve their self-integrity. This assumption has been supported by many research studies illustrating that people actively try to maintain positive views of themselves (e.g., Dunning, Heath, & Suls, 2004; Taylor & Brown, 1988; for review, see Sedikides & Gregg, 2008). The second assumption is that when an important component of the self is threatened, people may bolster another part of the self to cope with the threat. These assumptions apply in the face of any threat that may influence the self, regardless of the domain of the threat.

The second assumption is rooted in Steele’s (1988) view that one’s sense of “global self-integrity” is composed of many different aspects of the self-concept. These include one’s roles, values, group identities, central beliefs, goals, and relationships with close others (Crocker & Wolfe, 2001), as illustrated in Figure 1. Steele (1988) describes global self-integrity as the “experience of the self as adaptively and morally adequate.” Because the self-system is flexible (Tesser, Martin, & Cornell, 1996), if one component of global self-integrity is threatened (e.g., one’s goal to be successful academically), then another (e.g., one’s value of honesty) can be

bolstered to compensate. As a result, people can react to the initial threat without being defensive (e.g., Cohen, Aronson, & Steele, 2000; Napper, Harris, & Epton, 2009; Reed & Aspinwall, 1998; Steele & Liu, 1983) and produce the ideal outcome in the face of threat – protecting the self while acting in an adaptive manner (e.g., Epton & Harris, 2008).

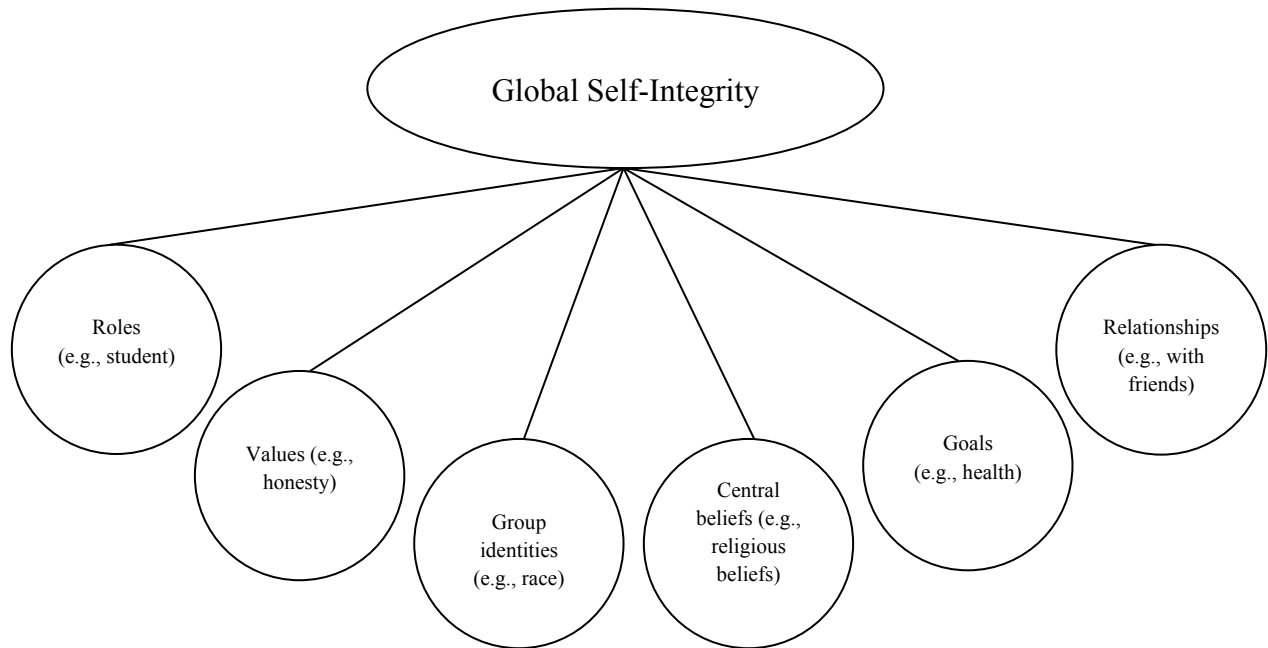


FIGURE 1. Representation of global self-integrity (adapted from Sherman & Cohen, 2006)

To give an example of self-affirmation in action, consider Black students who experience stereotype threat in school. Stereotype threat occurs when members of a group (e.g., Black students) have the potential to confirm a stereotype about the group to which they belong (e.g., that Black students perform poorly in school; Steele & Aronson, 1995). In the face of this stereotype threat, Black students could respond defensively by denigrating the importance of academic success (Crocker & Major, 1989), a course of action that will likely affect them

negatively for the rest of their lives. However, Black students who self-affirmed by completing an in-class writing exercise about a value important to them performed better academically than Black students who did not self-affirm (Cohen, Garcia, Apfel, & Master, 2006; Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009). The students have thus displayed an ideal outcome - preserving their sense of integrity without performing poorly academically.

1.1.1 Studying self-affirmation

Many studies manipulate self-affirmation in an experimental setting using one of several standard techniques (for a comprehensive review of these techniques, see McQueen & Klein, 2006). The most common method of manipulating self-affirmation is to require participants to positively affirm a personally important value. Participants' most important values are identified, often by having them rank the importance of each value in a list. They then complete some version of the Allport-Vernon Study of Values Scale that allows them to affirm the importance of their most important value relative to other values (e.g., Koole, Smeets, van Knippenberg, & Dijksterhuis, 1999; Steele & Liu, 1983).

Alternatively, participants may write about why their most personally important value is important to them or how it informed their behavior in the past (e.g., Fein & Spencer, 1997; Sherman, Nelson, & Steele, 2000). Other less common manipulations involve giving participants positive feedback (e.g., Steele, Spencer, & Lynch, 1993) or having them reflect on a value believed to be universally important, such as kindness (e.g., Briñol, Petty, Gallardo, & DeMarree, 2007; Reed & Aspinwall, 1998). Because being aware of self-affirmation manipulations reduces their effectiveness (Sherman, Cohen et al., 2009), the self-affirmation manipulation is usually presented as one study and the measurement of dependent variables occurs in an ostensible second study. Although Steele (1988) originally suggested that people are

primarily motivated to resolve their self-integrity and not a specific threat, requiring participants to self-affirm does not allow researchers to determine participants' primary motivation. However, experimentally manipulating self-affirmation and exposing participants to threat does allow researchers to observe the flexibility of self-system maintenance (Steele, 1988; Tesser et al., 1996).

Self-affirmation can also occur spontaneously in threatening situations, supporting an original assumption of self-affirmation theory – that people are motivated to preserve their self-integrity when threatened (Steele, 1988). In a study of expressive writing, breast cancer patients writing about their breast cancer experiences wrote many self-affirming statements (Creswell et al., 2007), and other studies indicate that people affirm their relationships when they feel threatened (Chen & Boucher, 2008; Murray, Bellavia, Feeney, Holmes, & Rose, 2001). Despite these studies on spontaneous self-affirmation, most self-affirmation research utilizes experimental manipulations of self-affirmation via focusing on values that are important to the self.

1.1.2 The broad-ranging effects of self-affirmation

Self-affirmation minimizes defensive reactions and encourages adaptive behaviors after exposure to many types of threats (for review, see Harris & Epton, 2009; Sherman & Cohen, 2006). Self-affirmation allows people to minimize the unpleasantness of cognitive dissonance (Aronson, Cohen, & Nail, 1999; Steele & Liu, 1983). Among self-affirmed people who are exposed to health threats, increased engagement in healthy behaviors (and intentions to engage in healthy behavior) is observed (e.g., Epton & Harris, 2009; Jessop, Simmonds, & Sparks, 2009; Sherman et al., 2000; van Koningsbruggen & Das, 2009). Self-affirmed people do not display physiological stress responses when exposed to social evaluative threats (Creswell et al., 2005;

Sherman, Bunyan, Creswell, & Jaremka, 2009). Black students experiencing stereotype threat achieve higher grades after self-affirming throughout the academic year (Cohen et al., 2006, 2009), and women experiencing stereotype threat regarding their math abilities perform better on a math test after self-affirming (Martens, Johns, Greenberg, & Schimel, 2006). Self-affirmed people behave in a less discriminatory fashion against stereotyped groups (Fein & Spencer, 1997; Lehmiller, Law, & Tormala, 2010). These are just a sampling of the domains in which self-affirmation has served as a useful strategy for coping with threat in a non-defensive manner.

1.1.3 The importance of investigating mediators of the effects of self-affirmation

Exploring mediators of the effects of self-affirmation is important for multiple reasons. First, this research enriches the body of knowledge about self-affirmation theory, allowing for modification of the theory in order to understand reactions to threat. Second, major consequences, positive and negative, could arise when using self-affirmation as an intervention (e.g., in academic or clinical health settings where people are exposed to real threats and subsequently making behavioral decisions that affect important, real outcomes). Some research illustrates that self-affirmation may be ineffective for certain groups (e.g., highly threatened people, Klein & Harris, 2009) or even detrimental to certain groups (e.g., unrealistic pessimists; Klein et al., 2010). Other research on self-affirmation processes indicates that self-affirmation may work through processes not proposed in the original theory. For example, Cohen and colleagues (2009) found that among Black students, self-affirmation is a recursive process that can affect academic performance early, resulting in long-term changes to overall academic trajectory. Understanding the processes by which self-affirmation operates may enable researchers to design streamlined, cost-effective self-affirmation interventions that encourage adaptive behavior without wasting resources by focusing on parts of threat responses that are not likely to be affected by self-affirmation.

1.1.4 Known mediators of the effects of self-affirmation

Research suggests that self-affirmation generally results in higher level construal (Wakslak & Trope, 2009). High level construals are more abstract, less complex, and more goal relevant (e.g., thinking of toothbrushing as “preventing tooth decay”) than low level construals, which are concrete, more contextualized, and less goal-related (e.g., thinking of toothbrushing as “moving a brush around one’s mouth”; Trope & Liberman, 2000, 2003; Vallacher & Wegner, 1989). Another study indicates that the relationship between self-affirmation and delaying gratification while ego-depleted is mediated by this higher level of construal (Schmeichel & Vohs, 2009), and recently Sherman and Hartson (2011) suggest that higher level construal is one of the primary processes by which self-affirmation exerts its effects on reactions to threat because it allows people to see the world at a broader level and contextualize the threat.

Several studies suggest that self-affirmed people are more discerning when processing threat. Klein and Harris (2009) found that participants allocated more attention to processing threatening words that were contained in a threatening message, and other work shows that threat-related cognitions are more accessible when people are self-affirmed (van Koningsbruggen, Das, & Roskos-Ewoldsen, 2009). When self-affirmed young women were explicitly asked how much they thought about a message indicating a link between alcohol consumption and increased breast cancer risk, they reported thinking deeply about it (Napper et al., 2009). Self-affirmed participants who watched a pre-taped abortion debate were more persuaded by strong than weak arguments (Correll, Spencer, & Zanna, 2004), and a more recent study indicates that participants faced with a health threat are only persuaded to take action to reduce their risk by a strong message, not a weak one (Klein, Harris, Ferrer, & Zajac, 2011). In addition, self-affirmed caffeine-consuming women exposed to a message linking caffeine intake

to fibrocystic breast disease oriented more quickly to threatening health information, recalled less risk-disconfirming information, and spent more time reading threatening health information than did non-affirmed caffeine-drinkers (Reed & Aspinwall, 1998).

Several studies indicate that self-affirmation affects physiology and health. For example, self-affirming led to a decreased cortisol stress response after exposure to a social evaluative threat compared to non-affirmed individuals (Creswell et al., 2005). Another study showed that being self-affirmed before facing an academic threat (i.e., a midterm exam) resulted in lower epinephrine levels than non-affirmed individuals (Sherman, Bunyan et al., 2009). In addition, breast cancer patients who completed an expressive writing task and self-affirmed while writing reported fewer physical health problems three months later (Creswell et al., 2007), and after completing multiple self-affirmation writing exercises over their winter break, college students reported feeling less ill than did non-affirmed students (Keough, Garcia, & Steele, 1998).

Given that behavioral intentions are theorized to be important predictors of behavior (Ajzen, 1991; Ajzen & Fishbein, 1980), it is no surprise that many self-affirmation studies have assessed intentions to engage in adaptive behaviors following the threat. Much of this research has been conducted in a health context given that health threats can frequently be minimized by risk-reduction behaviors. These studies generally show that self-affirmation increases intentions to engage in adaptive health behaviors, such as intentions to quit smoking (Armitage, Harris, Hepton, & Napper, 2008; Harris, Mayle, Mabbott, & Napper, 2007), decrease alcohol consumption (Harris & Napper, 2005), reduce caffeine intake (Sherman et al., 2000; van Koningsbruggen et al., 2009), increase sunscreen use (Jessop et al., 2009), eat more fruits and vegetables (Epton & Harris, 2008), undergo colorectal cancer screening (Klein et al., 2010), and take a written diabetes screening test (van Koningsbruggen & Das, 2009) after exposure to

messages communicating the health threats of engaging in negative behaviors (e.g., smoking, drinking alcohol) or not performing positive behaviors (e.g., using sunscreen, eating sufficient servings of fruits and vegetables) relevant to the threat. Despite the fact that all of the findings above occurred in the domain of health, the intentions measures represent numerous types of behaviors (e.g., commencing new behaviors, changing the frequency of current behaviors, and complete cessation of current behaviors), suggesting that these findings may generalize to other domains.

Several self-related mechanisms of self-affirmation have been proposed and tested. For example, self-affirmation results in less negative self-beliefs. In one study, Keough et al. (1998) found that after performing a stressful backward subtraction task, self-affirmed participants demonstrated a smaller drop in self-worth than did non-affirmed students. In two studies, Napper et al. (2009) found that a self-affirmation manipulation while *not* under threat led to more positive self-appraisals and thinking more about positive aspects of the self. In a powerful demonstration of self-affirmation as an intervention for reducing the achievement gap between Black and White students, Cohen et al. (2009) showed that, over time, self-affirmed Black students maintained their beliefs in their abilities to fit in and do well in school, although these beliefs did not mediate the relationship between self-affirmation and academic performance.

Several studies indicate that self-affirmation increases people's sense of self-efficacy. Self-affirmed people who read about eating more fruits and vegetables reported higher self-efficacy than their non-affirmed counterparts (Epton & Harris, 2008), as did self-affirmed young women who read about a link between alcohol consumption and breast cancer (Harris et al., 2007) and self-affirmed female sunbathers who read about the role of sunbathing in the development of skin cancer (Jessop et al., 2009). In addition, the self-affirmed young women in

the Harris et al. (2007) study reported higher perceived behavioral control. In only one of these studies was self-efficacy formally tested as a mediator of the relationship between self-affirmation and intentions to engage in healthy behavior (i.e., increasing fruit and vegetable intake), but the analysis was not significant (Epton & Harris, 2008).

One might expect that self-esteem, considered by many to be a self-resource (Hobfoll, 1989), would be a likely candidate as a mediator. Several studies show an increase in self-esteem when self-affirmed (Fein & Spencer, 1997; Keough et al., 1998) or less negative esteem (Derks, van Laar, & Ellemers, 2009). One study showed an increase in implicit self-esteem when assessed as higher evaluation of name letters (Koole et al., 1999), but implicit self-esteem did not mediate the relationship between self-affirmation and decreased rumination. Because of the unsystematic nature of these findings, self-esteem is generally not regarded as the underlying process explaining self-affirmation's effects (Harris & Epton, 2009; Sherman & Cohen, 2006), but is being fruitfully explored as a moderator (e.g., Landau & Greenberg, 2006; Spencer, Fein, & Lomore, 2001).

1.2 SELF-AFFIRMATION AND THE SELF

Despite the focus on the self in investigations of self-affirmation, surprisingly little work has focused on how different aspects of the self might be brought to bear in understanding the effects of self-affirmation. Self-affirmation is typically viewed by researchers as having some effect on the self. However, if self-affirmation does not actually influence the self (as is suggested by research showing that self-affirmation affects positive feelings towards others, but not feelings toward the self; Crocker, Niiya, & Mischkowski, 2008), it requires a re-thinking of self-affirmation theory and to the paradigms typically used to study it. Another standing issue in the

literature is that it is unclear exactly how self-affirmation manipulations conducted in the laboratory are operating (Harris & Epton, 2009, 2010; Sherman & Cohen, 2006; Sherman & Hartson, 2011). To address any of these issues in the literature, more exploration of the role of the self in self-affirmation is essential.

1.2.1 Self-concept clarity

One way in which self-affirmation may affect the self is by increasing self-concept clarity. Self-concept clarity is “the extent to which self-views are clear, confident, consistent, and stable across time” (Swann & Bosson, 2010). The self-concept can be composed of multiple self-schemas within different domains (Markus, 1977). For example, an individual may identify as a woman, a Muslim, a loyal friend, a mother, and an honest person. These different identities combine to form a person’s self-concept. Naturally, integrating these multiple facets into one self-concept may be more challenging for some than others. Thus some people demonstrate low self-concept clarity, and others demonstrate high clarity.

Self-concept clarity is typically treated as an individual difference measure, often assessed using the Campbell Self-Concept Clarity Scale (Campbell et al., 1996). When completing the scale, participants are asked to rate how much they agree or disagree with 12 statements such as “In general, I have a clear sense of who I am and what I am” and “My beliefs about myself often conflict with one another.” Scores on the scale range from 12 to 60, and responses are coded such that higher scores indicate greater self-concept clarity and lower scores indicate lower self-concept clarity. Despite chronic tendencies towards high or low self-concept clarity, people may demonstrate state levels of self-concept clarity that differ from their trait levels (Campbell et al., 1996; Lavalley & Campbell, 1995; Nezlek & Plesko, 2001). State levels of self-concept clarity have been assessed with the full Campbell Self-Concept Clarity scale

(e.g., Wakslak & Trope, 2009), several items from the Campbell Self-Concept Clarity scale (e.g., Nezlek & Plesko, 2001), or additional items constructed for specific studies by researchers (e.g., reverse-coded response to “To what extent would you say your beliefs about yourself conflicted with one another in this situation?”; Lavalley & Campbell, 1995).

High trait self-concept clarity is correlated with numerous positive outcomes (Swann & Bosson, 2010). These include high global self-esteem (Campbell, 1990; Campbell, Assanand, & Di Paula, 2003) and decreased neuroticism (Campbell et al., 1996; Campbell et al., 2003). High self-concept clarity is also associated with more adaptive coping skills (Smith, Wethington, & Zhan, 1996).

Much less research has investigated the effects of *state* self-concept clarity, but this research does indicate that self-concept clarity can fluctuate based on negative and positive events (Lavalley & Campbell, 1995; Nezlek & Plesko, 2001). For example, Lavalley and Campbell (1995) found that participant ratings of state self-concept confusion (i.e., low self-concept clarity) mediated the relationship between goal-relevance of negative daily events and reactions to those events. Nezlek and Plesko (2001) assessed student ratings of daily events and daily self-concept clarity (measured using several modified items from the Campbell Self-Concept Clarity Scale) over ten weeks, and they determined that daily ratings of self-concept clarity fluctuated based on the events of the day and differed from participants’ trait self-concept clarity. In another study, researchers manipulated low and high self-concept clarity by having participants write about instances in which they acted in accordance with descriptors irrelevant or relevant to the self-concept, respectively (Setterlund & Niedenthal, 1993, Study 3). They found that people experiencing state high self-concept clarity engaged in prototype matching

(i.e., making choices based upon how similar a given choice option matches a prototype that fits with one's self-perception) more than those induced to feel low self-concept clarity.

1.2.2 Self-affirmation and self-concept clarity

There are reasons to believe that self-affirmation and self-concept clarity might be related. First, several research findings indicate that self-affirmation and high trait self-concept clarity have similar effects on outcome variables, suggesting that self-affirmation and self-concept clarity could be linked. For example, both self-affirmation and self-concept clarity may affect the way people cope with negative events. Self-affirmation results in reduced defensiveness when coping with threat (Harris & Epton, 2009; Sherman & Cohen, 2006). Research on trait self-concept clarity indicates that people with high self-concept clarity tend to use more adaptive active coping strategies, such as taking action, planning, and positive reinterpretation of events (Smith et al., 1996). Individuals with lower self-concept clarity endorsed the use of passive, less adaptive strategies such as denial, mental disengagement, behavioral disengagement, and drug/alcohol use. Most notably, the active coping styles associated with high self-concept clarity are much less defensive in nature than the passive coping styles associated with low self-concept clarity. Also important to note is that Smith and colleagues controlled for self-esteem because self-esteem and self-concept clarity are highly correlated (Campbell, 1990; Campbell et al., 2003), Self-concept clarity predicted the use of coping styles independently of self-esteem, indicating that regardless of how positively or negatively participants felt about themselves, their self-concept clarity predicted reacting to threats in a less defensive, more adaptive manner.

In addition, both trait self-concept clarity and self-affirmation have been linked with reduced reporting of negative health problems. Creswell et al. (2007) found that breast cancer patients who spontaneously self-affirmed when completing an expressive writing task reported

fewer negative health problems three months later, compared to patients who did not self-affirm. In the self-concept clarity literature, people with high self-concept clarity reported lower levels of depression than did individuals with low self-concept clarity (Constantino, Wilson, Horowitz, & Pinel, 2006; Lee-Flynn, Pomaki, DeLongis, Biesanz, & Puterman, 2011).

A second reason to posit a relationship between self-affirmation and self-concept clarity is research suggesting that they operate via similar mechanisms. For example, participants with high self-concept clarity or who are self-affirmed ruminate less when threatened than their low self-concept clarity or non-affirmed counterparts. Bechtoldt, De Dreu, Nijstad, and Zapf (2010) found that high self-concept clarity participants showed more cooperative problem-solving when faced with social conflict (which is likely to be perceived as threatening; Bushman & Baumeister, 1998) than low self-concept clarity participants. The relationship between self-concept clarity and cooperative problem-solving was mediated by rumination such that higher self-concept clarity was associated with less rumination. A previous study found that self-affirmed participants threatened by failure feedback on an IQ test also ruminated less (e.g., had less goal-related thought accessibility) than non-affirmed participants (Koole et al., 1999). Campbell et al. (1996) also discovered that low self-concept clarity was associated with more ruminative self-focused attention.

A third reason to speculate that self-affirmation and self-concept clarity are related is the similarity between self-affirmation and self-reflection. This is most clear in the case of written self-affirmation manipulations, in which participants are often required to think of a value important to them and write about why it is important and how it has guided behavior (e.g., Fein & Spencer, 1997; Sherman et al., 2000). For example, relative to their non-affirmed counterparts, college students who self-affirmed by writing down desirable personal characteristics or rating

how descriptive positive statements about important values were agreed more with the statement “[I] focus my attention on who I am” (Napper et al., 2009). In fact, self-affirmation has been described before as thinking about “who you are” (Sherman & Cohen, 2006), a phrase that captures the essence of self-concept clarity – a clear and stable view of the self.

Some research supports the link between self-reflection, an integral component of self-affirmation manipulations, and self-concept clarity. Most notably, people with a high tendency to self-reflect (i.e., those with high scores on the Private Self-Consciousness scale; Fenigstein, Scheier, & Buss, 1975) have more clearly articulated views of the self (Nasby, 1985, 1989). Although this link is correlational and concerns trait measures of introspection and self-concept clarity, it suggests a possible relationship between the self-reflection required when self-affirming and feelings about one’s self-concept clarity.

The strongest evidence to date of a link between self-affirmation and self-concept clarity comes from a study by Wakslak and Trope (2009). In this study, it was hypothesized generally that self-affirming would result in high level construals. For study 1, the authors hypothesized that self-affirmation would increase state self-concept clarity because a “coherent, structured self-representation” (i.e., high self-concept clarity) would indicate that self-affirmation was associated with high level construal. In this study, college students wrote an essay about the personal importance of a value before they completed the Campbell Self-Concept Clarity Scale. As predicted, self-affirmed participants scored higher on the scale than did non-affirmed participants. Despite the use of a trait measure of self-concept clarity, the authors interpreted the changes in participants’ senses of self-concept after affirming as state changes (not overall changes in trait levels of self-concept clarity). It seems unlikely that a brief self-affirmation

exercise would alter one's global sense of self-concept, and so it is predicted that self-affirmation would affect one's sense of self-concept in the moment (i.e., state self-concept clarity).

1.2.2.1 State self-concept clarity as a mediator. The research just reviewed indicates that self-reflection, an important component of self-affirmation, is related to self-concept clarity and that both self-affirmation and self-concept clarity are associated with more adaptive coping styles, independent of level of self-esteem. These results, along with the finding that self-affirmation can result in a more structured self-representation suggest that self-affirmation affects how clearly people view their self-concepts, regardless of how they feel about themselves. This increase in self-concept clarity suggests that whether one has high or low self-esteem, reflecting positively on the self (as is required when self-affirming) will reduce defensiveness to threat.

A potential model of the ways in which self-concept clarity might mediate the relationship between self-affirmation and defensive reactions to threat emerges. This model (see Figure 2) predicts that self-affirmation increases state self-concept clarity, which in turn reduces defensiveness in the presence of threat. In other words, it is predicted generally that self-concept clarity mediates the relationship between self-affirmation and reduced defensiveness.

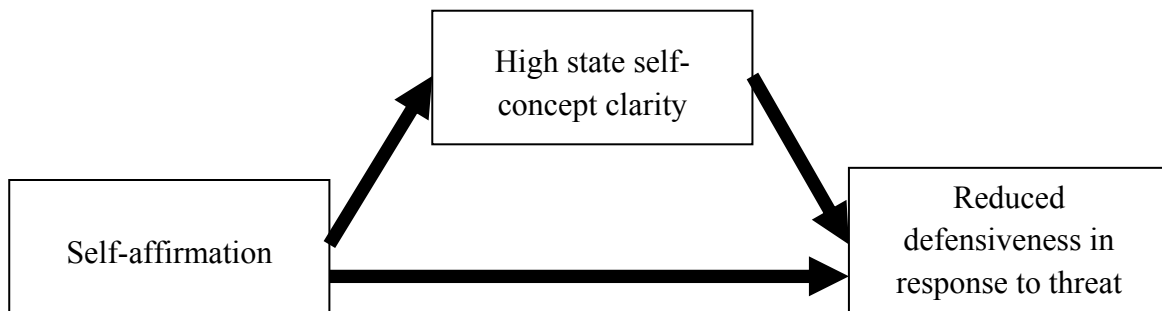


FIGURE 2. Model of mediation of self-affirmation and reduced defensiveness relationship by high state self-concept clarity

1.3 OVERVIEW OF EXPERIMENTS AND HYPOTHESES

Given the idea posed here that self-affirmation may affect self-concept clarity and subsequent reactions to threat, two experiments were conducted to explore the relationships among these constructs. In Experiment 1, participants were either self-affirmed or not, then presented with a health message that was threatening to some of them. State self-concept clarity was measured immediately prior to and after self-affirming, allowing for observation of changes in state self-concept clarity as a result of the self-affirmation task. The following hypotheses were tested.

Hypothesis 1: Self-affirmed participants, regardless of whether they are threatened, will experience more self-concept clarity than their non-affirmed counterparts.

Hypothesis 2: Consistent with prior research, it is predicted that self-affirmation will result in reduced defensiveness for people faced with a health threat relative to non-affirmed, threatened participants and to non-threatened participants (affirmed or not).

Hypothesis 3: The change in self-concept clarity proposed in hypothesis 1 will mediate the self-affirmation/defensiveness relationship proposed in hypothesis 2.

Experiment 2 tested the potential for self-concept clarity to serve as a mediator of the self-affirmation/reduced defensiveness relationship utilizing an experimental design. Although measuring variables and establishing mediation through statistical analysis is very common, alternate methods are available to explore the role of a construct as a potential mediator (Spencer, Zanna, & Fong, 2005). One such alternative method – experimentally manipulating the mediator - was used here. A traditional self-affirmation manipulation was altered to allow participants to self-affirm in either a low or high self-concept clarity manner. Thus all participants self-affirmed, but some did so in a way that resulted in low self-concept clarity and

others in a way that resulted in high self-concept clarity. In this study, participants completed either the low or high self-concept clarity self-affirmation manipulation and then read an article linking a risky behavior to a negative health outcome. Reactions to the threat were assessed. The following hypothesis was tested.

Hypothesis 4: Threatened participants in the high self-concept clarity self-affirmation condition will show less defensiveness relative to their threatened low-self-concept clarity affirmed peers, demonstrating that self-affirmation only occurs when accompanied by increased self-concept clarity. It is unclear how the manipulations will affect non-threatened participants, so no specific hypotheses were made regarding their behavior.

Participants in both experiments were introductory psychology students at the University of Pittsburgh. To determine the necessary sample size, a medium effect size was assumed for all paths in the mediation model pictured in Figure 2 (based on the effect sizes reported for the association between self-affirmation and self-concept clarity in Wakslak & Trope, 2009, and for self-affirmation in McQueen & Klein, 2006). According to MacKinnon, Lockwood, Hoffman, West, and Sheets (2002), a sample size of 100 is necessary to have sufficient statistical power to detect a medium effect size when conducting mediation analyses. Additional participants were enrolled in each study based on conservative estimates that only about 40% of participants would engage in the detrimental health behaviors addressed in each study. All participants received credit towards the completion of a research participation requirement. In both experiments, experimenters were blind to self-affirmation condition.

2.0 EXPERIMENT 1

2.1 METHOD

This study is a between-groups experiment with self-affirmation condition (*self-affirmed* or *non-affirmed*) serving as the independent variable.

2.1.1 Procedure

Because self-affirmation effects are reduced when participants are aware of the purpose of such procedures (Sherman, Cohen et al., 2009), male and female participants ($N = 297$; M age = 18.78, SD age = 1.36; 62% male; 88% White; 95% heterosexual; 67% sexually active in past six months) were told they were participating in two separate studies, one about values (really a self-affirmation manipulation) and one about the interpretation of health information (really an opportunity to expose participants to a health threat).

All participants completed a measure of state self-concept clarity prior to self-affirming and immediately after self-affirming. Participants rated how much four statements adapted from the Campbell Self-Concept Clarity Scale applied to them “right now, that is, in the present moment.” These four statements were:

1. My beliefs about myself conflict with one another.
2. I feel that I am not really the person that I appear to be.
3. My beliefs about myself seem to change.
4. If I were asked to describe my personality, my description might end up being different today compared to another day.

Participants responded on the same 5-point scale used for the standard Campbell Self-Concept Clarity Scale where 1 = *strongly disagree*, 2 = *disagree*, 3 = *neither agree nor disagree*, 4 = *agree*, and 5 = *strongly agree*. A similar measure was used by Nezlek and Plesko (2001) to measure daily self-concept clarity.

2.1.1.1 Values study/self-affirmation manipulation. Participants were randomly assigned to either a self-affirmation ($n = 148$) or non-affirmation control ($n = 149$) condition. Self-affirmed participants completed a typical values affirmation procedure (e.g., Fein & Spencer, 1997; Sherman et al., 2000) in which they selected their *most* important value from a given list of values. They were also given the option to select “other” and write in their most important value, after which they wrote an approximately one page response to the following prompt:

“Please write a short statement (around 2-3 paragraphs) about why this value is important to **you**. Take a few minutes to think about this value and how this value has influenced your past behaviors or attitudes. Please write about how you use this value in your everyday life – at work, at home, with friends, or in dealing with strangers. If you can, try to recall and write about specific occasions on which this value determined what you did.”

Control participants selected their *least* important value and wrote a response to the following:

“Please write a short statement (around 2-3 paragraphs) about why this value could be important to **another person**. Take a few minutes to think about how this value may influence this person’s behaviors or attitudes. Please write about how this person may use this value in everyday life – at work, at home, with friends, or in dealing with strangers. Only think about why this value might be important to another person, and **not** why it is unimportant to you.”

All participants then completed four manipulation check items in which they rated how much they agreed or disagreed with four statements about the influence of the value on their lives, how they try to live up to the value, how the value is an important part of who they are, and how they care about the value on the same 5-point scale described earlier. To assess the effects of self-affirmation on state self-concept clarity, participants again completed the self-concept clarity measure described above.

2.1.1.2 Health information study. All participants read an article about a health problem (see Appendix A). This moderately threatening article described a link between sexual activity and the risk of contracting sexually transmitted diseases (STDs) and is based on fact sheets for various sexually transmitted diseases on the Centers for Disease Control website (CDC, 2011). Participants returned the article to the experimenter. As part of another study, participants were asked to summarize the main points of the article. They then completed the measures designed to assess defensive reactions to the article for the current study.

2.1.1.3 Dependent Measures. The dependent measures were based on those used to assess defensive reactions in previous studies (Renner, 2004; Sherman et al., 2000). Participants rated how much they agreed or disagreed that there is an association between sexual activity and risk of getting STDs and that they personally needed to do something to reduce their risk of getting an STD on 5-point scales (1 = *strongly disagree*, 2 = *disagree*, 3 = *neither agree nor disagree*, 4 = *agree*, 5 = *strongly agree*). Participants also rated their personal likelihood and the likelihood of other Pitt students of their age and gender getting an STD if they or their partners did not use a condom on a 7-point scale (1 = *not at all likely*, 7 = *extremely likely*). In addition, participants indicated how worried they were about their risk of getting an STD if they or their partner do not use a condom, how important they thought it was for sexually active people to use condoms to

reduce their risk, to what extent they personally *should* make sure that they or their partner uses a condom, and to what extent they thought they would *actually* make sure they or their partner uses a condom. All of these items were answered on 7-point scales (1 = *not at all*, 7 = *extremely*). Defensive reactions to threat were operationalized as lower agreement with the article message, lower agreement with the need to reduce risk, lower personal risk estimates, higher perceived risk for others, less worry, less vulnerability, and reduced belief in the importance of using condoms (in general), beliefs that they personally should and would use condoms.

To assess participants' interest in learning more about various preventive health behaviors, they were asked to select topics (i.e., exercise options, healthy eating, flu vaccinations, smoking cessation resources, and STD testing on campus) about which they would like to receive more information. Participants were later informed that they would not actually receive this information.

2.1.1.4 Demographic and control items. Participants were asked if they were sexually active (i.e., if they engaged in vaginal, anal, or oral sex in the past six months). They also reported their sexual orientation, age, gender, race, and ethnicity.

2.1.1.5 Behavioral measure. Participants were told that the study had concluded and were given an envelope containing three dollars (in quarters) for their participation. To assess actual behavior related to the health threat, all participants assembled a health kit that would ostensibly be considered for use in the university's student health center. Participants were given a box containing five each of extra-strength condoms, extra-sensitive condoms, dental floss samples, and single-use SPF 25 sunscreen packets. Participants created a health kit by placing items that they thought should be in the kit in a brown paper bag. They were also given the option of

purchasing the kit at a cost of 25 cents per item in the kit if they wished. This task was designed to reduce self-presentational concerns regarding purchasing items of a sensitive nature (i.e., condoms) and also provides an opportunity to investigate whether participants show increased interest in any items related to the reduction of health risk or only those related to the specific health threat described.

2.1.1.6 Debriefing. Participants completed a brief questionnaire asking them to describe the purpose of each study and whether they thought there was a connection between the two studies. Participants were told that the study had concluded, and experimental manipulations and any deceptive elements of the experiment (e.g., the two-study cover story) were explained to them. Participants were told that they would be contacted for a brief follow-up via email and were given a feedback sheet describing the experiment and informing them of local STD testing resources to take home.

2.1.1.7 Follow-up survey. In order to obtain measures of necessary control variables without them being influenced by the laboratory self-affirmation manipulation, all participants were sent an email one week after laboratory participation asking them to complete a follow-up questionnaire. 74 participants in the control condition and 73 in the self-affirmation condition responded for a total of 147 respondents. Data from seven respondents were incomplete and so are excluded from analyses. This subsample of 147 participants had a mean age of 18.65 years ($SD = 0.85$) and were 57% male, 91% White, 97% heterosexual, and 61% sexually active in the past six months. Thus the percentage of men, White students, and sexually active students appeared lower than for the overall sample. A series of logistic regression analyses indicated that participants who completed the follow-up did not differ from the participants who did not on race, sexual activity, and sexual orientation, $ps > .10$, and an ANOVA indicated that there was no

difference in age, $F(1, 271) = 1.34, p = .25$. A logistic regression analysis indicated that there was a difference based on gender (62% male for the entire sample, 57% male for the follow-up sample), $OR = 1.79, p = .02$, but because this difference is small in an absolute sense and no predictions are made regarding gender, the difference is not discussed further.

The follow-up questionnaire contained the 12-item Campbell Self-Concept Clarity Scale (Campbell et al., 1996), a one-item self-esteem measure (Robins, Hendrin, & Trzesniewski, 2001), an 11-item scale assessing chronic tendencies to self-affirm in daily life (P. Harris, personal communication, September 23, 2010), and one item assessing whether the participants had engaged in sexual activity since participating in the laboratory session and if so, whether they or their partner had used a condom.

2.2 RESULTS

To test the effectiveness of random assignment, analyses were conducted to see if demographic and potential control variables differed by self-affirmation condition. For the overall sample ($N = 297$), a one-way analysis of variance (ANOVA) using self-affirmation as the independent variable indicated that the two conditions did not differ by age, $F(1, 295) = 0.07, p = 0.79$. A series of logistic regression analyses using self-affirmation condition as the sole predictor showed that gender, race (White or non-White), and sexual orientation (heterosexual or non-heterosexual) did not vary by condition, $ps > .05$.

Because the number of participants who fully completed the follow-up questionnaire was substantially smaller ($n = 147$), the same analyses were conducted for these participants. No difference in age was observed, $F(1, 145) = 0.30, p = .59$. Logistic regression analyses also

revealed that gender, race (White or non-White), and sexual orientation (heterosexual or not) also did not vary by condition, $ps > .21$. Self-esteem and trait self-concept clarity were obtained only for those who completed the follow-up, and ANOVAs indicate that these two items did not differ across conditions, $F_s < 1.64$, $ps > .20$. The mean self-esteem score, which could range from 1 to 7 was 3.52 ($SD = 0.99$) and the mean trait self-concept clarity score, which could range from 12 to 60, was 42.42 ($SD = 8.57$)

Because these analyses indicate no differences across conditions when considering either the overall sample or the subsample that completed the follow-up questionnaire and that in essence, random assignment worked, age, gender, race, sexual orientation, self-esteem, and trait self-concept clarity were not entered into the remaining analyses.

2.2.1 Manipulation check

To determine if participants completed the self-affirmation or control task correctly, a research assistant read each essay and coded it as being completed correctly or not. Only two participants did not complete the essay task correctly. Because the exclusion of these two participants does not affect the results of analyses, results reported include all participants unless otherwise specified.

Four items assessed participants' ratings of the importance of the value that they had written about. These four ratings were averaged to create a single measure of value importance ($\alpha = 0.93$). A regression analysis using self-affirmation condition as the predictor indicated that as instructed, participants in the self-affirmation condition wrote about a more important value than did participants in the control condition, $\beta = 0.85$, $t = 27.08$, $p < .01$.

2.2.2 Main analyses

It was hypothesized that self-affirmed participants who are threatened by the message linking sexual activity and increased STD risk (i.e., those who engage in sexual activity) will experience more self-concept clarity (hypothesis 1) and be less defensive (hypothesis 2) after self-affirmation relative to those who are non-affirmed. It was also predicted that self-concept clarity would mediate the relationship between self-affirmation and defensive reactions such that self-affirmed threatened participants experienced more self-concept clarity, which would result in less defensive reactions to the threat (hypothesis 3). To explore these hypotheses, a series of regression analyses were conducted.

2.2.2.1 Testing hypothesis 1. To test hypothesis 1, that self-affirmed participants would report greater self-concept clarity than non-affirmed participants, self-concept clarity scores were calculated. Four items measured self-concept clarity immediately prior to writing the self-affirmation or control essay and immediately after. The four pre- and post-essay items were reverse-coded and averaged to create pre- ($\alpha = 0.76$) and post-essay ($\alpha = 0.82$) scores of self-concept clarity where lower scores indicate lower self-concept clarity and higher scores indicate higher self-concept clarity. The pre- and post-essay self-concept clarity scores were significantly and highly correlated, $r = .92$, $p < .01$. A regression analysis utilizing self-affirmation condition as a predictor showed that pre-essay self-concept clarity scores did not differ by condition, $\beta = 0.07$, $t = 1.21$, $p > .22$. Another regression analysis showed that as predicted, post-essay self-concept clarity scores were higher for participants who wrote an affirming essay) than for those who wrote the control essay, $\beta = 0.13$, $t = 2.18$, $p = .03$. A difference score was calculated for each participant by subtracting pre-essay self-concept clarity score from post-essay self-concept clarity score, and self-affirmed participants showed a greater increase in self-concept clarity ($M =$

0.11, $SD = 0.36$) relative to non-affirmed participants ($M = 0.02$, $SD = 0.31$), $\beta = 0.13$, $t = 2.23$, $p = .03$.

2.2.2.2 Testing Hypothesis 2. In order to test hypothesis 2, that self-affirmed participants would be less defensive relative to their non-affirmed counterparts, a series of regression analyses using condition and sexual activity as independent variables was conducted. Participants who are defensive in reaction to threat were expected to show lower agreement with the threatening health message, lower need to do something to change personal STD risk, lower personal STD risk perceptions, higher perceived STD risk for others, decreased feelings of vulnerability to and worry about getting an STD, minimized importance of risk reduction behaviors (i.e., using condoms), and decreased ratings of how much one should or will actually engage in risk-reducing behavior (i.e., using condoms). In addition, observing participant behavior may yield information regarding participants' defensiveness. For example, less defensive participants were expected to show more willingness to purchase items (i.e., condoms) that would reduce risk when used.

Analyses indicated that there were no significant effects of any of the predictors for message agreement, need to reduce personal risk of getting an STD, personal perceived STD risk, perceived STD risk for others, and perceived importance of condom use, $ts < 1.06$, $ps > .29$.

Sexual activity was a significant or marginally significant predictor for a number of variables. Sexually active participants felt less vulnerable, less worried, and thought they should and would actually use condoms to a lesser extent than non-sexually active participants (see Table 1 for β s, t values, and p values). No main effects of self-affirmation condition or interactions of sexual activity and self-affirmation condition emerged in these analyses, F s < 2.72 , $ps > .10$. This pattern of findings indicates defensiveness on the part of sexually active

participants, but contrary to previous findings and to hypothesis 2, self-affirmation did not mitigate this defensiveness.

TABLE 1. β s, t values, and p values for effect of sexual activity

Variable	β	t value	p value
Vulnerability	-.16	-1.94	= .05
Worry	-.15	-1.84	= .07
Belief that one should personally use condoms	-.20	-2.44	= .02
Belief that one will actually use condoms	-.23	-2.87	< .01

Participants were given the opportunity to request up to five pieces of health-related information. Logistic regression analyses were conducted using self-affirmation condition, engagement in sexual activity, and the interaction of the two as predictors and whether participants requested more information (0 = *no*, 1 = *yes*) for each topic as the outcome variables. These analyses showed that self-affirmation condition, engagement in sexual activity, and the interaction of the two did not predict requesting more information related to any non-sex related items (i.e., exercise options, healthy eating, influenza vaccination, or smoking cessation resources on campus). Sexual activity, but not self-affirmation condition or the interaction of the two, predicted requesting more information related to STD testing resources on campus such that participants who were sexually active were more likely to request more information than those who were not ($OR = 2.71$, 95% CI = 1.15 – 6.36, $p < .05$). It is unclear how exactly to interpret

this finding as seeking more information could either represent non-defensiveness and openness to information regarding a health risk, or it could represent an intent to seek out information with the intention of defensively processing it so it can be dismissed or downplayed (e.g. Liberman & Chaiken, 1992).

The total number of pieces of information requested was also considered. 42.8% of participants requested no information, 24.6% requested one piece, 22.9% requested two, 8.8% requested three, 1.0% requested four, and no participants requested all five pieces of information. Regression analyses were conducted using self-affirmation condition, sexual activity, and their interaction as predictors. None of the predictors were significant for the number of pieces of information requested (whether analyzed as is or square-root transformed), $t_s < 1.10$, $p_s > .27$. A logistic regression analysis considering the same predictors on a dichotomous variable of whether participants requested more information (0 = *requested no pieces of information*, 1 = *requested one or more pieces of information*) also indicated that neither self-affirmation condition, sexual activity, nor the interaction predicted whether or not participants requested information, $p_s > .50$.

Participants were also given an opportunity to assemble and purchase a health kit. Ten participants were excluded from these analyses because they either did not complete the task or another error occurred (e.g., the box for creating the health kit contained more or less than five of each item). A logistic regression analysis showed that self-affirmation, engagement in sexual activity, and the interaction of the two did not predict whether participants purchased the kit they made, $p_s > .62$.

A series of regression analyses was conducted using condition and sexual activity as independent variables and numbers of items included in the health kits and cost of the health kits as dependent variables. The means and standard deviations for these items are in Table 2.

A marginal effect of condition occurred such that self-affirmed participants included *fewer* extra-strength condoms than their non-affirmed counterparts ($\beta = -0.18, t = 1.80, p = .07$), and assembled less expensive kits (i.e., kits that contained fewer items) than non-affirmed participants, $F(1, 283) = 2.98, p = .09$. There were no significant effects of sexual activity or interaction for these analyses, $F_s < 1.15, p_s > .28$. When considering the total number of condoms included in the kit, a marginal main effect of self-affirmation condition emerged such that non-affirmed participants included more condoms than self-affirmed participants, $F(1, 283) = 3.18, p = .08$. Sexual activity predicted the number of floss packets included such that non-sexually active participants included more floss packets than sexually active participants ($\beta = -0.19, t = -2.28, p = .02$), and neither self-affirmation condition nor the interaction of the self-affirmation condition and sexual activity were significant predictors, $t_s < 0.51, p_s > .61$. There were no effects of any of the predictors on the number of extra-sensitive condoms, total number of condoms, number of sunscreen packets included, or the cost of the kit (i.e., the number of items in the kit), $t_s < 1.47, p_s > .14$.

In the follow-up questionnaire, participants were asked to indicate how sexually active they were in the past seven days (i.e., the seven days since participating in the laboratory session of the study). Of the participants who completed the follow-up questionnaire, only 44 completed it within seven to ten days of their laboratory appointment. The majority (73%) of these participants reported that they did not engage in any sexual activity, with one participant indicating that they engaged in sexual activity and never used a condom, two indicating that they

TABLE 2. Mean number of items in kit and purchase price for each condition

	Not Sexually Active		Sexually Active	
	Mean number of items in kit (SD)		Mean number of items in kit (SD)	
Non-Affirmed	Floss:	1.70 (1.02)	Floss:	1.33 (0.94)
	Sunscreen:	1.19 (1.12)	Sunscreen:	1.24 (1.05)
	Extra-Sensitive		Extra-Sensitive	
	Condoms:	1.89 (1.61)	Condoms:	2.18 (1.45)
	Extra-Strength		Extra-Strength	
	Condoms:	2.11 (1.51)	Condoms:	1.99 (1.41)
	Total Number of		Total Number of	
	Condoms:	4.00 (3.04)	Condoms:	4.17 (2.44)
	Purchase Price:	\$1.73 (\$0.84)	Purchase Price:	\$1.68 (\$0.66)
Self-Affirmed	Floss:	1.61 (1.10)	Floss:	1.26 (0.70)
	Sunscreen:	1.39 (1.04)	Sunscreen:	1.22 (1.00)
	Extra-Sensitive		Extra-Sensitive	
	Condoms:	1.65 (1.16)	Condoms:	1.95 (1.22)
	Extra-Strength		Extra-Strength	
	Condoms:	1.63 (1.20)	Condoms:	1.86 (1.18)
	Total Number of		Total Number of	
	Condoms:	3.27 (2.18)	Condoms:	3.81 (2.24)
	Purchase Price:	\$1.54 (\$0.87)	Purchase Price:	\$1.57 (\$0.59)

used a condom some of the time, and eight participants indicating that they used a condom each time they had sex that week. Unfortunately, such a small number precluded conducting more detailed analyses to determine whether condition and sexual history affected behavior in the week after participating in the lab session of the study.

In summary, on many of the self-report variables, sexually active participants displayed defensive reactions to the message suggesting that they were at risk of contracting STDs based on their sexual behavior. On two of the behavioral variables (i.e., requesting more information about STD testing and including extra-sensitive condoms in a health kit), sexually active participants did not display defensiveness.

2.2.2.3 Testing hypothesis 3. Although testing of hypothesis 1 indicated that self-affirmation increased self-concept clarity, testing hypothesis 2 showed that self-affirmation did *not* reduce defensiveness (when measured either by self-report or by behavioral outcomes) as expected. When considering the results in terms of the predicted mediation model in Figure 2, only the relationship of self-affirmation to self-concept clarity was significant, but not the relationship between self-affirmation and reduced defensiveness. Because tests of mediation require significant relationships among the predictor (i.e., self-affirmation), outcome (i.e., reduced defensiveness), and proposed mediator (i.e., increased self-concept clarity), mediation analyses were not conducted.

2.3 DISCUSSION

Experiment 1 was designed to explore the effects of self-affirmation on self-concept clarity and to explore whether self-concept clarity might serve as a mediator of the relationship between self-affirmation and reduced defensiveness. Hypothesis 1, that self-affirming would result in

increased self-concept clarity, was supported, in that participants randomly assigned to write a self-affirming essay reported higher self-concept clarity scores after the essay relative to participants who wrote a non-affirming essay. That said, the difference between the means was small suggesting a small effect that was detectable due to the large sample size in this study. Hypothesis 2 was not supported in that self-affirmed participants did not display reduced defensiveness. In this study, reduced defensiveness was assessed by self-report on a variety of affective and cognitive variables, as well as by observing behavior. Instead, sexually active participants showed defensive reactions on many self-report variables. Given the lack of relationship between self-affirmation and reduced defensiveness, hypothesis three – that self-concept clarity would mediate the effects of self-affirmation on reduced defensiveness – was also not supported.

It is unusual that in this study, self-affirmed participants did not show the well-documented outcome of reduced defensiveness. It is possible that for some reason, the self-affirmation manipulation was not effective, although this is unlikely given that this exact manipulation has been used in similar samples of college students several times in the past (e.g., Klein & Harris, 2009). Perhaps more likely is the possibility that the particular health issue utilized in the study (i.e., reading a threatening message about contracting sexually transmitted diseases) was not threatening enough. Although measures of how threatening the message was perceived to be were not obtained as part of the study, a pilot test of the article used (see Appendix A) was conducted, and participants, whether sexually active or not in the prior six months, reported feeling at risk of ($M = 3.95$, $SD = 1.60$) and worried about ($M = 4.78$, $SD = 1.92$) contracting an STD. Given that these two items were assessed using a 7-point scale (1 =

not at all likely [worried], 7 = extremely likely [worried]), the means near the midpoint of the scale indicate at least some level of threat or worry but not to an extreme.

Another possible explanation for the lack of reduced defensiveness is that self-affirmation is effective in reducing defensive reactions to threat, but only for particular types of behaviors. For example, self-affirmation has resulted in increases in health-promoting behaviors (e.g., eating more servings of fruits and vegetables, Epton & Harris, 2008) and much of the work on reduced defensiveness explores detection behaviors (e.g., screening for disease, Harris & Epton, 2009). As Epton and Harris (2008) suggest, more research needs to be conducted to explore the effects of self-affirmation on health-compromising behaviors like the one featured here – engaging in unprotected sexual activity.

3.0 EXPERIMENT 2

3.1 OVERVIEW

For Experiment 2, state self-concept clarity was manipulated experimentally. Experimentally manipulating a potential mechanism allows causal inferences to be made regarding the relationship among the independent variable, mediator, and dependent variable, which in this case are self-affirmation, self-concept clarity, and defensiveness respectively (Sigall & Mills, 1998; Spencer et al., 2005). Participants self-affirmed in a way that either promoted low self-concept clarity or high self-concept clarity. If high self-concept clarity mediates the effects of self-affirmation, participants who self-affirmed in a way that promotes high self-concept clarity should show less defensiveness when exposed to threatening health information than those who self-affirmed in a way that promotes low self-concept clarity (hypothesis 4).

3.2 SELF-CONCEPT CLARITY SELF-AFFIRMATION PILOT TEST

Before running the main study, new experimental manipulations needed to be constructed. These manipulations needed to meet two criteria. First, one of the manipulations needed to induce low self-concept clarity and the other high. Secondly, both manipulations needed to create a self-affirmation opportunity.

3.2.1 Method

All participants (N = 161, 100% female, 88.8% White, *M* age = 18.38 years, *SD* = 1.85 years) completed the Campbell Self-Concept Clarity Scale (Campbell et al., 1996) in addition to the

single-item measure of self-esteem (Robins et al., 2001) and four-item state self-concept clarity scale administered in Experiment 1. Participants were then randomly assigned to one of three self-affirmation conditions or a control condition. All participants in the self-affirmation conditions selected their most important value from a list. For two of the conditions, participants self-affirmed in a way that promoted low self-concept clarity. Participants in these conditions ($n = 39$ for the first low self-concept clarity self-affirmation condition and $n = 41$ for the second) responded to one of the following two prompts:

1. “Please write a short statement (around 2-3 paragraphs) about a specific occasion when you were unsure that the selected value influenced your behavior and that you felt like you did not have a strong sense of ‘who you were’.”
2. “Please write a short statement (around 2-3 paragraphs) about a specific occasion when you felt sure that the selected value did *not* influence your behavior and that you really felt like you did *not* have a strong sense of ‘who you were’.”

These two prompts were designed to require participants to engage in self-reflection (a key component of self-affirmation manipulations) and think about times when their self-concept was uncertain. It was unknown whether reflecting on an instance in which participants felt certain or uncertain that their selected value influenced their behavior would affect the power of the manipulation, thus both versions were tested.

Participants in the third self-affirmation condition ($n = 41$) self-affirmed in a manner that promoted high self-concept clarity by responding to the following prompt:

“Please write a short statement (around 2-3 paragraphs) about a specific occasion when you felt sure that the selected value influenced your behavior and that you really felt like you knew ‘who you were’.”

Participants in the control condition ($n = 39$) chose their least important value and completed the standard self-affirmation control writing task already described in Experiment 1.

After completing the writing exercise, participants were asked a series of questions designed to assess the effects of the manipulation. Participants again completed the four state self-concept clarity measures used in Experiment 1, which were reverse coded and averaged to create one measure of pre-affirmation self-concept clarity ($\alpha = .83$). They also completed several items based on those used by Napper et al. (2009) designed to assess the degree to which the manipulation causes participants to focus on important, positive aspects of the self. Participants rated the degree to which the writing activity made them think about positive aspects of themselves, focus attention on who they are, be aware of things they value about themselves, think about things personally important to them, and think about their values on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). They also completed the value importance manipulation checks from Experiment 1, and they rated how they felt about themselves on a scale from 1 (*poorly*) to 5 (*extremely positively*). Participants also reported their age, race, and ethnicity.

3.2.2 Results

A series of ANOVAs indicated that age, self-esteem, trait self-concept clarity, and pre-affirmation self-concept clarity did not differ by condition, $F_s < 1.78$, $p_s > .15$. A logistic regression analysis also indicated that race and condition were not associated, $p = .38$. An ANOVA using self-affirmation condition as the independent variable and the average of the four value importance items ($\alpha = .95$) was significant, $F(3, 156) = 150.07$, $p < .01$. Tukey post-hoc analyses show that as instructed, participants in all three of the self-affirmation conditions ($M_{low1} = 4.44$, $SD_{low1} = 0.10$; $M_{low2} = 4.51$, $SD_{low2} = 0.09$; $M_{high} = 4.59$, $SD_{high} = 0.09$) wrote about values

that were more personally important than did participants in the control condition ($M = 2.21$, $SD = 0.10$), $ps < .01$.

The four items designed to assess self-affirmation (i.e., how much participants thought about positive aspects of the self, focused attention on who they were, were made aware of things they personally valued, and how much they thought about things personally important to them) were averaged to create one score ($\alpha = .76$). An ANOVA using condition as the independent variable and the measure just described as the dependent variable was significant, $F(3, 156) = 10.54$, $p < .01$, and the mean for the control group was lowest ($M = 3.39$, $SD = 0.11$), followed by the low self-affirmation conditions ($M_{low1} = 3.78$, $SD_{low1} = 0.11$; $M_{low2} = 3.73$, $SD_{low2} = 0.10$), and the high condition ($M = 4.21$, $SD = 0.10$). Tukey post-hoc analyses indicated that the mean for the control group was significantly lower than the first low condition ($p = .05$) and the high condition ($p < .01$), but not the second low condition ($p = .11$). The first low condition mean differed from that of the high condition ($p = .02$) but not from the second low condition ($p = .98$). The second low condition mean differed from the mean of the high condition ($p < .01$). In addition, there were no differences among conditions in how participants felt about themselves, $F(3, 156) = 1.29$, $p = .28$, indicating that the self-affirmation manipulations did not significantly alter feelings about the self. These analyses illustrate that as intended, self-affirmation occurred for all self-affirmation conditions relative to the control condition.

An analysis of covariance (ANCOVA) using the condition as the independent variable and pre-essay self-concept clarity score as a covariate was conducted. Condition did not significantly affect post-essay self-concept clarity score, $F(3, 155) = 0.96$, $p > .41$. Pre-essay self-concept clarity score was a significant predictor, as would be expected, $F(1, 155) = 498.34$, $p < .01$.

A less elegant approach to this analysis, but one that allows closer examination of how self-concept scores might have changed in the different conditions, is to evaluate difference scores. A self-concept clarity difference score was thus calculated by subtracting the pre-affirmation self-concept clarity score from the post-affirmation self-concept clarity score. In this case a negative score indicates that self-concept clarity decreased after self-affirming, a positive score indicates an increase, and a score at or near zero indicates little to no change in self-concept clarity. An ANOVA using condition as the independent variable and self-concept clarity difference score as the dependent score was not significant, $F(3, 156) = 1.20, p = .31$, consistent with the ANCOVA results above. However, investigating the mean difference scores for each condition indicates that self-concept clarity barely changed for participants in the control condition ($M = -0.05, SD = 1.57$). It decreased for participants who completed either of the low self-concept clarity conditions ($M_{low1} = -0.38, SD_{low1} = 1.46; M_{low2} = -0.15, SD_{low2} = 1.78$), but decreased more for the first low self-concept clarity condition. Self-concept clarity increased for participants in the high self-concept clarity condition ($M = 0.32, SD = 1.88$). The effect size (Cohen's d) for the difference in difference scores for the first low self-concept clarity condition and the high self-concept clarity condition is 0.42, a small to medium effect size based on the convention that d s of .2, .5, and .8 indicate small, medium, and large effect sizes, respectively (Cohen, 1992). The effect size for the difference in difference scores for the second low self-concept clarity condition and the high self-concept clarity condition was $d = 0.26$.

3.2.3 Discussion

Examining the difference scores suggests that the high self-concept clarity condition resulted in an increase in self-concept clarity, and the first low self-concept clarity condition resulted in a decrease in self-concept clarity of similar magnitude. Even though the difference between these

two conditions was not statistically significant, the effect size calculation indicates that there was indeed a small to medium size effect of the manipulation. In addition, both of these conditions were affirming relative to a control condition. Although further modification of the self-affirmation manipulations could have been attempted, such changes would have risked altering the affirming properties of the manipulation. Thus it was deemed that two self-affirmation manipulations were successfully created with both being self-affirming and with one resulting in increased self-concept clarity and the other resulting in decreased self-concept clarity.

3.3 MAIN EXPERIMENT

3.3.1 Method

For this experiment, only female students were recruited as the health message about breast cancer was not relevant to male students. As in Experiment 1, participants ($N = 249$; M age = 18.46, $SD = 0.76$; 83% White, M alcoholic drinks in last week = 4.10, $SD = 6.16$) were told they were participating in two separate studies. The manipulation of self-affirmation and self-concept clarity were framed as a study of values. The second study was described as a study of health information processing and allowed for the presentation of threatening health information to participants.

3.3.1.1 Values study/self-concept clarity manipulation. Participants were randomly assigned to either the *low* ($n = 126$) or *high* ($n = 123$) self-concept clarity self-affirmation condition. The participants completed the writing prompt corresponding with the condition to which they were assigned (see pilot test description for prompts).

3.3.1.2 Health information study. Participants read a pamphlet describing a link between alcohol consumption and breast cancer risk and recommended that women drink no more than

seven servings of alcohol per week and no more than one per day. This pamphlet has been used successfully in previous self-affirmation studies (Harris & Napper, 2005; Klein & Harris, 2009), and so it was not pilot-tested prior to use.

3.3.1.3 Dependent measures. Participants answered questions similar to those used to measure defensiveness in Experiment 1. Participants rated how much they agreed or disagreed that there is an association between alcohol consumption and breast cancer, that they personally need to do something to reduce their risk of breast cancer, and that they could easily reduce the number of alcoholic beverages they drink on 5-point scales (1 = *strongly disagree*, 5 = *strongly agree*). Participants rated their personal risk, the risk to other female Pitt students of getting breast cancer, and worry about and vulnerability to getting breast cancer if they continued drinking at the same rate on a 7-point scale (1 = *not at all*, 7 = *extremely*). Participants also rated the importance of women reducing alcohol consumption on the same 7-point scale, as well as the extent to which they personally *should* and actually *would* drink less on a 7-point scale (1 = *no extent at all*; 7 = *to a great extent*).

3.3.1.4 Demographic and control information. Participants were asked multiple questions about their alcohol consumption, including how much they drank in the past week and in a typical week. They also reported their age, race, and ethnicity.

3.3.1.5 Debriefing. Participants were told that the studies were complete and completed a questionnaire about the purposes of each study and whether they believed there was a connection between the two studies. Participants were fully debriefed about the nature of the experiment and any deceptive elements (e.g., the two study cover story), told that they would be contacted with additional questions in a week, and given a feedback sheet to take home.

3.3.1.6 Follow-up. One week after participation, an experimenter emailed participants a brief questionnaire containing the follow-up items from Experiment 1 (with the exception of the question regarding sexual activity). Participants also reported how many alcoholic drinks they had consumed in the past seven days. 174 participants (M age = 18.42, SD = 0.72; 85% White, M alcoholic drinks in last week = 4.09, SD = 5.59) completed the follow-up questionnaire.

3.3.2 Results

A series of one-way ANOVAs was conducted to determine if demographic and control variables differed by self-affirmation condition for the overall sample of participants. No differences in age or number of alcohol drinks consumed in the seven days prior to laboratory participation were observed, $F_s < 1.60$, $p_s > .57$. A logistic regression analysis using condition as a predictor showed that race (White or non-White) did not differ across conditions, ($OR = 1.36$, $95\% CI = 0.70 - 2.66$, $p > .05$). When considering only the subsample of participants who completed the follow-up questionnaire, age, number of alcoholic beverages consumed in prior seven days, and race (White or non-White) did not differ by condition, $p_s > .18$. Self-esteem (as measured at follow-up) did not differ between conditions, $F(1, 171) = 0.88$, $p = .35$. Because these analyses indicate no differences across conditions, these variables were not entered into the remaining analyses. A marginal difference in trait self-concept clarity occurred with participants in the low self-concept clarity condition ($M = 39.30$, $SD = 7.54$) having marginally higher trait self-concept clarity than participants in the high self-concept clarity condition ($M = 37.29$, $SD = 7.54$), $F(1, 174) = 2.84$, $p = .09$. All analyses reported below were conducted with trait self-concept clarity score as an additional predictor, but because there were no significant effects for any of the analyses, it is not discussed further. Also, the analyses below were conducted separately for people who indicated that they did not drink in the past seven days and those who indicated that

they had at least one drink. Similar patterns were found, so these analyses are not discussed further.

3.3.2.1 Determining alcohol consumption. Participants reported how much alcohol they consumed each day of the week before the laboratory session and each day in a typical week. The responses for each day were quantified and summed to calculate the number of drinks in the week before the experiment and the number of alcoholic drinks in a typical week. 109 participants indicated that they did not drink in the past week, and 77 indicated that they did not have any drinks in a typical week. Participants who did consume alcohol consumed on average 7.32 drinks ($SD = 6.64$) in the week before participating and 7.75 ($SD = 6.45$) in a typical week.

3.3.2.2 Testing hypothesis 4. To test the prediction that threatened participants in the high self-concept clarity self-affirmation condition would show less defensiveness relative to their threatened low-self-concept clarity affirmed peers (hypothesis 4), a series of regression analyses was conducted using condition ($0 = \text{low self-concept clarity self-affirmation}$, $1 = \text{high self-concept clarity self-affirmation}$), alcohol consumption in the last week (mean-centered), and the interaction of the two as predictors. This series of analyses was also conducted for alcohol consumption in a typical week, but because the results were identical, they will not be reported here.

Neither condition nor alcohol consumption, nor the interaction of the two predicted agreement with the message, belief in needing to reduce own risk, beliefs in ability to reduce alcohol consumption, perceived importance of women (in general) reducing their alcohol consumption, and beliefs about how likely they were to personally drink less, $t_s < 1.45$, $p_s > .14$.

Results for other variables show some evidence of acceptance of higher risk. Higher alcohol consumption in the week prior to participation was associated with increased perceptions

of breast cancer risk, $\beta = 0.47$, $t = 4.92$, $p < .01$. Those who drank more also felt more vulnerable to breast cancer relative to those who drank less, $\beta = 0.53$, $t = 5.53$, $p < .01$. Alcohol consumption levels were associated with personal beliefs in needing to drink less such that those who consumed more alcohol believed they should drink less more so than did those who did not drink as much, $\beta = 0.31$, $t = 3.01$, $p < .01$. For all three of these regression analyses, condition and the interaction of condition and alcohol consumption were not significant predictors, $ts < 1.32$, $ps > .18$.

Despite increased personal risk perceptions and feelings of vulnerability for those who drank more, the relationship among self-concept clarity, alcohol consumption, and worry was less straightforward. Alcohol consumption, $\beta = 0.45$, $t = 4.45$, $p < .01$, and the interaction of condition and alcohol consumption, $\beta = -0.23$, $t = -2.28$, $p < .05$, but not condition, $\beta = 0.02$, $t = 0.36$, $p = .72$, were associated with worry about getting breast cancer. Figure 3 illustrates the mean difference between the conditions at various levels of alcohol consumption. Examining the figure indicates that experiencing a high self-concept clarity affirmation increased worry for participants who consumed less than the mean level of alcohol consumption, which could be beneficial in that increased worry can motivate risk-reducing behavior (McCaul & Mullens, 2003; McCaul, Schroeder, & Reid, 1996b). Self-affirming in a high self-concept clarity manner did not seem to affect participants who drank at the mean level, and it appears to have decreased worry for participants consuming levels of alcohol above the mean, which could actually lead to less risk-reducing behavior. This effect appears to be driven largely by participants consuming the highest and lowest levels of alcohol as evidenced by the p values for the lines corresponding to those groups. The simple slopes for participants 2 and 3 standard deviations above the mean were significant or marginally so with p values of .06 and .05, respectively. For participants 2

and 3 standard deviations below the mean, the p values for the simple slopes were .07 and .06, respectively. For consumers at the mean or one standard deviation above or below, the simple slopes were not significant, $ps > .13$.

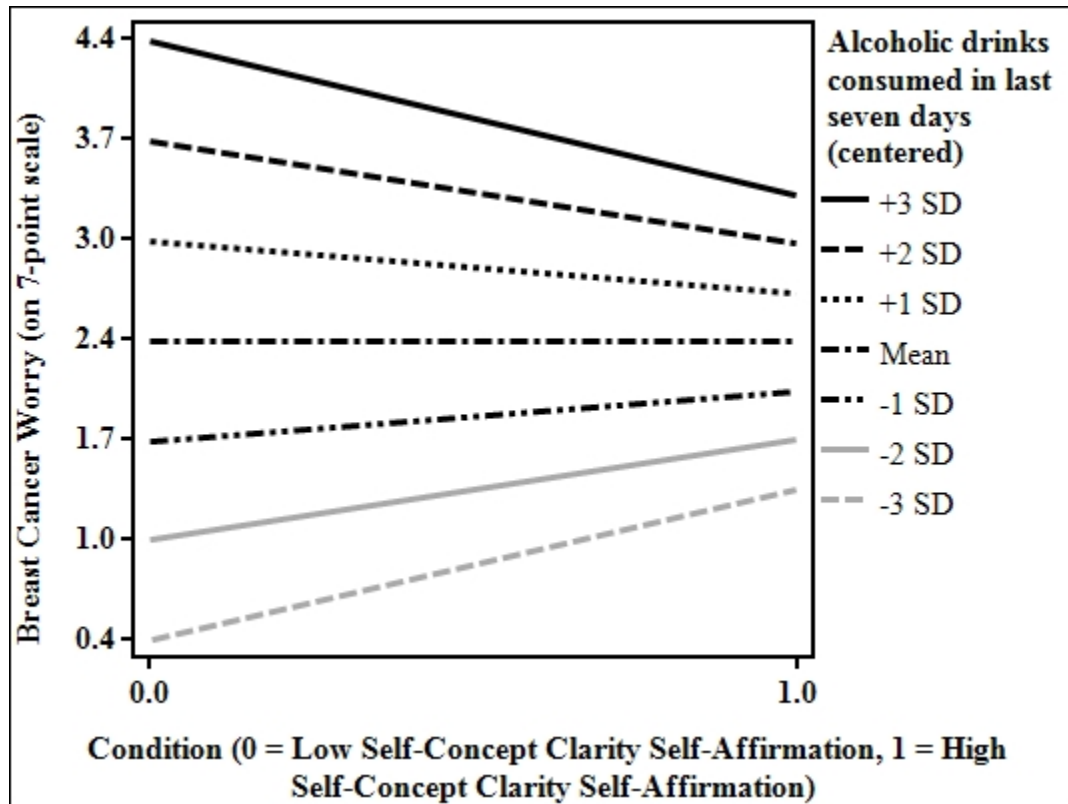


FIGURE 3. The interaction of condition and alcohol consumption on breast cancer worry

Alcohol consumption, $\beta = -0.20$, $t = -1.86$, $p = .07$, and the interaction of condition and alcohol consumption, $\beta = 0.18$, $t = 1.66$, $p = .10$, but not condition, $\beta = -0.06$, $t = -0.83$, $p = .41$, were associated with perceived breast cancer risk for other Pitt students, although not at conventionally significant levels. Figure 4 illustrates the mean differences between conditions at the mean level of alcohol consumption, in addition to one standard deviation above and below the mean. Participants who consumed lower levels of alcohol perceived the breast cancer risk for

other students like them to be slightly lower when affirmed in a high self-concept clarity manner relative to when affirmed in a low self-concept clarity manner. High alcohol consumers perceived others' risk as being greater when affirmed in a high self-concept clarity manner relative to when affirmed in a low self-concept clarity manner. Participants who drank at the mean level did not seem to be influenced by the condition to which they were assigned. None of the simple slopes were significant, $ps > .27$, and the range of means was very small.

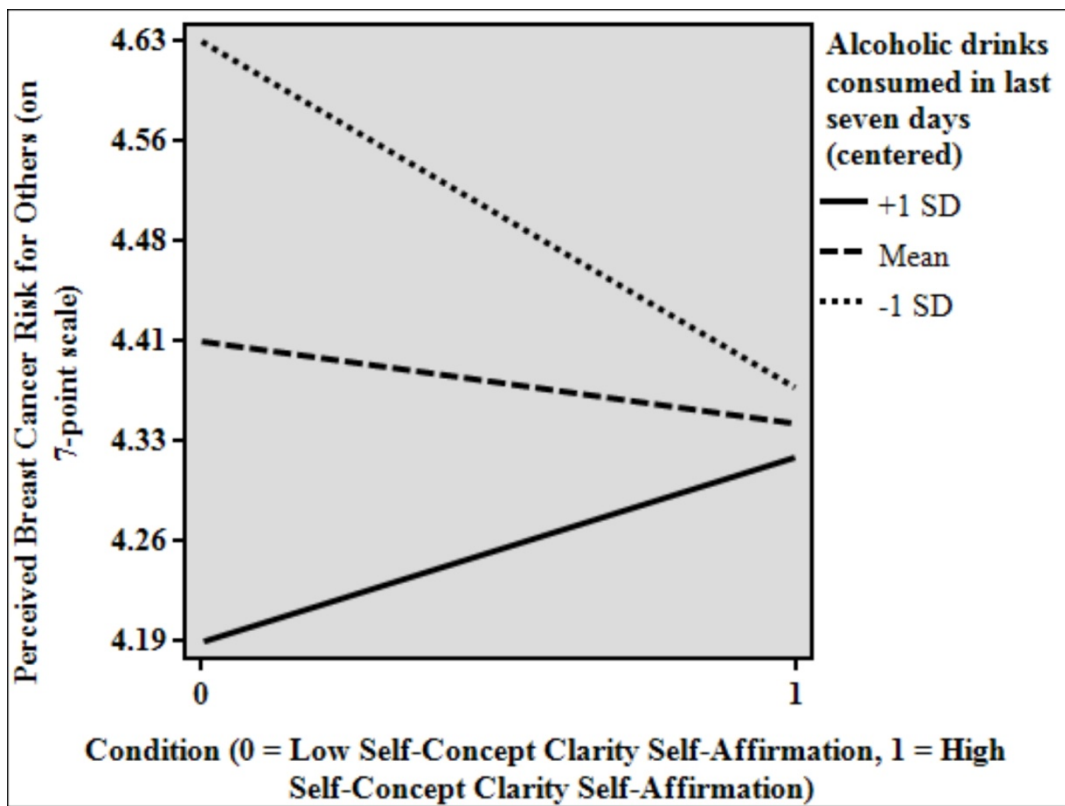


FIGURE 4. The interaction of condition and alcohol consumption on perceived risk breast cancer for others

In the follow-up questionnaire, participants were asked to report the number of alcoholic drinks they had in the past seven days (i.e., the seven days since participating in the laboratory

session of the study). Of the participants who completed the follow-up questionnaire, 93 completed it within seven to ten days of their laboratory appointment. These participants reported that they drank 3.16 beverages ($SD = 5.31$). A regression analysis using condition, alcohol consumption (mean-centered), and their interaction as predictors yielded significant effects of the alcohol consumption variable, $\beta = 0.79$, $t = 8.37$, $p < .01$ and the interaction of condition and alcohol consumption, $\beta = -0.20$, $t = -2.05$, $p < .05$, but not the condition variable, $\beta = -0.13$, $t = -1.58$, $p = .12$. Figure 5 illustrates the mean differences between conditions at the mean level of alcohol consumption, in addition to one standard deviation above and below the mean. Drinkers at or above the mean level of alcohol consumption reported drinking less in the week after participation when affirmed in a high self-concept clarity manner relative to those who affirmed in a low self-concept clarity manner, but condition did not seem to affect participants who drank less than the mean level of alcohol. The simple slope for the line corresponding with drinkers above the mean level, $t = -2.42$, $p = .02$, was significant, but the simple slopes for the lines corresponding to drinkers at or below the mean were not, $ps > .14$.

Worry about breast cancer was strongly correlated with perceived personal risk of breast cancer, $r = .72$, $p < .01$, and correlated to a lesser degree with the number of drinks reported at follow-up, $r = .18$, $p < .05$. Perceived personal risk of breast cancer was also moderately correlated with number of drinks reported at follow-up, $r = .34$, $p < .01$.

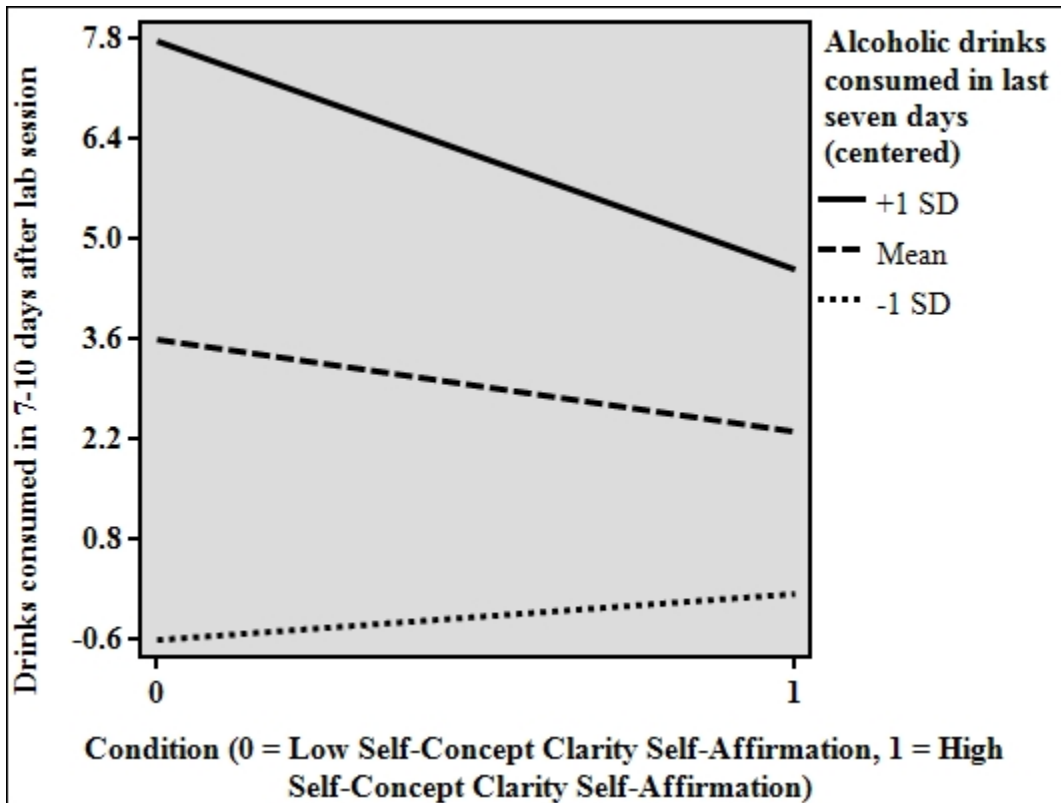


FIGURE 5. The interaction of condition and alcohol consumption on number of alcohol drinks consumed in 7-10 days after laboratory session

3.3.3 Discussion

Experiment 2 was designed to experimentally manipulate and test self-concept clarity as a potential mediator of the relationship between self-affirmation and reduced defensiveness. It was predicted in hypothesis 4 that threatened participants in the high self-concept clarity self-affirmation condition would show less defensiveness relative to their threatened low-self-concept clarity affirmed peers, demonstrating that self-affirmation only occurs when accompanied by increased self-concept clarity. It was unclear how the manipulations would affect non-threatened

participants (i.e., those who didn't drink or did not drink much), so no specific hypotheses were made regarding their behavior.

In general, it appears that hypothesis 4 was not supported given that condition did not significantly affect outcomes that would be indicative of reduced defensiveness. The condition to which participants were assigned did not affect message agreement, perceived need to reduce one's own risk, beliefs in one's own ability to drink less alcohol and likelihood of drinking less, and perceived importance of women (in general) reducing their alcohol consumption. High alcohol consumers who were in the high self-concept clarity condition actually worried less about their breast cancer risk and perceived others' risk as being higher relative to those who were in the low self-concept clarity condition, contrary to the increased worry and decreased risk perceptions for others that would be expected if the high self-concept clarity resulted in less defensiveness than the low self-concept clarity condition. The follow-up data do provide evidence that relative to the low self-concept clarity self-affirmation, participants who drank above the mean level and completed a high self-concept clarity self-affirmation reported drinking less following participation in the experiment.

Note that these findings should not be interpreted as a lack of effect of self-affirmation. Participants in both conditions self-affirmed, and they were not compared to a non-affirmed control group in this study. Thus it is possible that participants showed reduced defensiveness, but it appears that having increased self-concept clarity is not necessary for self-affirmation to operate. If it were, the high self-concept clarity group would be expected to show less defensiveness relative to the low self-concept clarity group.

Some of the results suggest that participants responded to the message reasonably given their risk level. Participants who drank more indicated higher perceived personal risk of breast

cancer, increased vulnerability to breast cancer, and more agreement with the belief that they should drink less. These results suggest two possibilities. First, as mentioned earlier, the self-affirmation may have been effective resulting in a fairly accurate sense of risk and vulnerability, but this is impossible to test given the lack of a control condition. Secondly, the health message may not have been threatening enough to warrant defensive reactions, a possibility that seems unlikely given that a nearly identical message has been used in similar samples of female college students in the US and the UK (e.g., Klein & Harris, 2009).

4.0 GENERAL DISCUSSION

Two studies were designed to explore the effect of self-affirmation on self-concept clarity and assess the potential mediational role of self-concept clarity in the relationship between self-affirmation and reduced defensiveness to threatening health information. Experiment 1 illustrated that self-affirming did result in a small but significant increase in self-concept clarity relative to those who did not self-affirm, providing support for hypothesis 1. In Experiment 1, self-affirmation did not reduce defensive responses to a health threat as expected, so the role of self-concept clarity as a mediator could not be tested. In Experiment 2, self-concept clarity was experimentally manipulated, but participants who self-affirmed in a manner that resulted in low or high self-concept clarity did not differ in consistent ways. They did differ in how worried they were about breast cancer in that self-affirming in a high self-concept clarity manner appeared to decrease worry for high alcohol consumers and increase worry for low alcohol consumers relative to their counterparts who self-affirmed in a low self-concept clarity manner (although these differences were not significant). An interesting behavioral effect occurred indicating that participants who completed the high self-concept clarity self-affirmation in the lab reported engaging in less unhealthy behavior (i.e., consuming fewer alcoholic drinks) in the seven to ten days after their participation relative to those who completed the low self-concept clarity self-affirmation. This pattern provides some evidence that self-affirmation may result in behavioral change, but only for certain groups of people.

4.1 IMPORTANCE

These results have important implications for self-affirmation theory. First, until now, the effects of self-affirming on self-concept clarity have barely been explored, with the exception of a single study by Wakslak and Trope (2009). The results of Experiment 1 provide some support that self-affirming results in a stronger, clearer sense of self. Also, as other researchers have pointed out (Harris & Epton, 2009), a better understanding of self-affirmation manipulations is necessary, and this study illustrates one consequence of a traditional written self-affirmation. The clarity of knowledge about the self-concept can be considered a meta-cognitive aspect of the self in that it is a construct that characterizes a specific property of a self-view but not the actual content of the self-view (Swann & Bosson, 2010). These findings raise the possibility that self-affirmation could affect other meta-cognitive aspects of the self. Self-esteem (the valence of a self-view) has been explored, but is not consistently affected by self-affirmation (Harris & Epton, 2009; Sherman & Cohen, 2006). The relationships between self-affirmation and other meta-cognitive self-related variables, such as the stability or the organization of self-knowledge, could be considered.

The Experiment 2 finding that self-affirmation resulted in more adaptive behavior (i.e., less drinking) for the individuals in the sample who consumed the most alcohol adds to several studies suggesting that self-affirmation is not universally effective and only affects behavior in an adaptive manner for participants at certain levels of risk (e.g., Klein & Harris, 2009). Furthermore, given that research illustrating the effects of self-affirmation on behavior is scant, it is notable that Experiment 2 illustrated a change in self-reported drinking behavior for those who

affirmed in a high self-concept clarity manner (relative to those who affirmed in a low self-concept clarity manner) approximately one week after self-affirming.

Although the main goal of this study was to explore self-affirmation processes, the results of this study provide insight into the way that people react to threatening health information. Most notably, despite the common finding that self-affirmation reduces defensive reactions to threat, no such reduced defensiveness occurred in Experiment 1. In fact, participants who engaged in risky behavior (i.e., sexual activity) showed defensive responses on several affective, cognitive, and behavioral variables, indicating that defensive reactions occur at multiple levels. It is possible in this study that the self-affirmation manipulation was not effective, but this seems unlikely given that the exact same manipulation has been successfully used in multiple other studies, in some cases with samples from the same population. Perhaps more likely is that the health information did not resonate personally with participants. This suggests that in self-affirmation studies caution must be used when considering how to present participants with a threat. It also suggests that self-affirmation may not be a panacea for all negative health behaviors, but may only be affective for certain categories of health behaviors.

As Harris and Epton (2009) point out, studies showing long-term effects of self-affirmation on actual behavior have explored health promoting behaviors like eating more servings of fruits and vegetables (Epton & Harris, 2008), and outside of the health domain, on improving academic performance (Cohen et al., 2006, 2009). Studies investigating other behaviors that focus on reducing behaviors detrimental to health, such as smoking less (Reed & Aspinwall, 1998) and reducing alcohol consumption (Harris & Napper, 2005), have shown significant effects of self-affirmation on behavioral intentions, but not on long-term behavior. If self-affirmation promotes behavioral change for behaviors that are promotion-focused, but not

behaviors that are prevention-focused, it is possible that self-affirmation induces a promotion focus. The regulatory fit (Higgins 2000, 2005) between the promotion focus that could arise from self-affirming and a behavior that is promotion-focused could explain why self-affirming results in behavior change only for certain types of behavior. It is interesting to note that behaviors for which self-affirmation had an effect involve increasing the frequency of the behavior as opposed to decreasing it. Among laypeople, increasing the frequency of a health behavior is generally viewed as having a greater impact than decreasing a health behavior (Kiviniemi & Rothman, 2008). Perhaps this view coupled with the effects of a self-affirmation results in greater motivation to increase the frequency of healthy behavior as opposed to engaging in health behavior that requires a decrease in frequency.

Alterations to the experiments could have allowed for additional analyses. For example, in Experiment 1, collecting additional information regarding sexual activity (e.g., number of partners, frequency of sexual activity, and frequency of condom use) would have allowed for more specific analyses linking specific risk behaviors to reactions to the health threat. In Experiment 1, participants were asked if they would like to receive more information, but they were never actually given this information. It would have been interesting to collect data on how participants processed the requested information to determine if asking for more information was indicative of openness to more information or if the new information was requested so that it could be scrutinized and refuted. In Experiment 2, tracking participant alcohol consumption for greater than one week after participation could have yielded useful information regarding the long-term potential for a manipulation of self-concept clarity and self-affirmation to influence behavior.

4.2 LIMITATIONS

Despite the contributions of these experiments, there are several limitations to the work. First, because reduced defensiveness did not occur in Experiment 1, hypothesis 3 - that self-concept clarity would mediate the relationship between self-affirmation and reduced defensiveness - could not be tested. In addition, the effect of self-affirmation on self-concept clarity was relatively small (Cohen's $d = 0.25$), and replication is required to determine if this effect is due to the large sample size. In this study, engagement in sexual activity was measured as a dichotomous variable, when in reality the types of sexual behavior and frequency with which individuals engage in such behavior is variable. As a result, the analyses conducted to determine if self-affirmation affected people differently based on the degree to which they engaged in the risky behavior were not as sensitive as they could have been. It is also possible that the increase in self-concept clarity could be indicative of the broader notion that self-affirmation results more generally in abstract construal (as was Wakslak and Trope's [2009] interpretation).

Experiment 2 also had several limitations. No control condition was included, as the emphasis was on comparing a low self-concept clarity self-affirmation to a self-affirmation that resulted in high self-concept clarity. As a result, it is not possible to determine if self-affirmation minimized participants' tendencies to respond defensively. That said, participants who drank more alcohol were more likely to show increased risk perceptions and higher reported vulnerability to breast cancer, suggesting that they did accurately understand their risk and did not respond to the information in a very defensive manner. It is possible in this case that the risk of breast cancer was too distal to result in strong threat for this sample of young women in their late teens.

Given the finding that self-affirmation may not be effective for all people, it is also important to consider the characteristics of the sample. In this sample, participants exhibited a range of drinking behavior, but perhaps not in the range that could be most affected by self-affirmation. During both the laboratory session and at follow-up, participants were asked to recall the number of alcohol beverages they consumed in the previous seven days. Although this is likely accurate in the case of non-drinkers, alcohol drinkers may not have accurately recalled their consumption. The results were similar when considering participants' reports of their alcohol consumption in a typical week, but this measure is still prone to the same recall problem as the measure of alcohol consumption in the past seven days. More sensitive measures of alcohol consumption (e.g., daily diaries) could minimize the issue of accurate assessment of risk behavior.

The manipulations used in Experiment 2 were novel, and thus they may not have been the best way of manipulating self-concept clarity and self-affirmation simultaneously, and other manipulations could be considered in future studies. Setterlund and Niedenthal (1993) manipulated self-concept clarity by instructing participants to describe several instances in which they acted in accordance with a highly self-descriptive trait. Other participants were asked to describe several instances in which they acted in accordance with a trait that was the antonym of a trait that they indicated as being self-descriptive earlier in the study in order to induce self-concept confusion (i.e., low self-concept clarity). The self-concept clarity manipulation is arguably a self-affirmation manipulation already, as it is very similar to other manipulations that involve reflecting on important values to the self. The self-concept clarity confusion task could be modified such that participants are asked to write about a non-descriptive trait (but one that is

non-negative). Using other manipulations would ensure that any findings that are replicated are due not just to a property of a specific manipulation but to the construct in question.

In both experiments, defensiveness was assessed in similar ways – by investigating affective, cognitive, and behavioral variables where defensiveness might occur, but in the future, defensiveness might be assessed in other ways. For example, the Intervention Defensiveness Scale (Palmer, Kilmer, Ball, & Larimer, 2010), a scale based on reactance theory that is designed to measure reactance against a specific alcohol education program, could be adapted to assess attitudes towards the health behavior recommended to those who have self-affirmed. Other choice measures (besides the information seeking and health kit assembly tasks used in Experiments 1) could also be used.

A selective exposure paradigm could be used to detect defensiveness. In a typical selective exposure paradigm, participants are asked to make a choice between two behavioral options, and then they are given an opportunity to choose information that supports or opposes the choice (Jonas, Schulz-Hart, Frey, & Thelen, 2001). This paradigm provides evidence of whether or not participants are open to reading choice-inconsistent information or not. For example, the author and colleagues are currently conducting a study in which participants are self-affirmed and then exposed to a potentially threatening choice, participating in clinical research. After indicating willingness to participate in clinical research, a selective exposure paradigm is being used to determine if participants are more willing to read choice-inconsistent information. Lastly, implicit measures, like using a visual-dot-probe task to assess the attention allocated to words related to the health threat with which participants are presented (as did Klein & Harris, 2009) could be useful alternatives. Other implicit measures such as the emotional

Stroop task that can be used to measure defensiveness of emotions could potentially be altered to explore defensiveness when encountering threatening words (Brosschot, Ruiter, & Kindt, 1999).

Self-concept clarity is typically analyzed as a trait-level variable, but here it was treated as a state variable. Although the Campbell Self-Concept Clarity Scale (Campbell et al., 1996) has been validated and widely used to test trait-level self-concept clarity, similar rigor has not been applied to measuring state self-concept clarity. Thus, the measure used here may not be the optimal way to detect changes in self-concept clarity. In the future, other measures of state self-concept clarity could be developed and validated.

4.3 FUTURE DIRECTIONS

Research on the mediators of self-affirmation could move forward in several directions. Although self-affirmation increased self-concept clarity in the first experiment, evidence for self-concept clarity as a mediator was not found in these experiments. Thus, future studies should continue to explore other self-related mediators of self-affirmation processes to determine how self-affirmation functions by affecting the self. As mentioned earlier, other metacognitive aspects of self-knowledge, such as self-concept organization and complexity, could be considered. These constructs could be measured before and after self-affirming to determine if self-affirmation results in changes. To build a stronger understanding of mediators, some of these studies should also include the manipulation of potential mediating variables when appropriate (as opposed to only assessing potential mediators and testing them statistically).

Most importantly, it may be useful to develop an understanding of which known mediators are exerting the largest effects on outcomes related to self-affirmation. From a

theoretical perspective, these may be the mediators that are imperative to include in a more comprehensive model of self-affirmation processes (see Sherman & Hartson, 2011 for one such attempt). From an intervention perspective, it may be most effective to pursue self-affirmation interventions that affect these particular mediators in the hopes of enacting adaptive behavioral change.

Self-affirmation shows potential for use as an intervention strategy to affect reactions to real world health threats. Self-affirmation exercises could be integrated into community health education programs prior to the presentation of health information and recommendations. It is also possible that self-affirmation could be adapted for use in clinical encounters prior to the receipt of test results. Efforts to better understand self-affirmation should continue in the hopes of using it to encourage adaptive decisions.

APPENDIX A

HEALTH ARTICLE FOR EXPERIMENT 1

Having vaginal, anal, and/or oral sex always carries a risk of contracting sexually transmitted diseases (STDs). If you are engaging in any of these activities, you have some chance of getting an STD. Many people who have an STD do not show symptoms at all, and people who have recently gotten an STD may not show symptoms for several days or weeks. Because of this, your sexual partner(s) could have a disease, and you would not know it.

Chlamydia and gonorrhea are two types of STDs. Both can be spread through various forms of sexual contact, including vaginal sex, anal sex, and/or oral sex. Women who get one of these STDs can experience abnormal vaginal discharge, and men can experience discharge from the penis. Both men and women may have a burning sensation when urinating, rectal pain, and/or throat infections. Some men and women experience long-term complications that can result in an inability to have children, and an increased chance of getting HIV (the virus that causes AIDS) if exposed to it. Because chlamydia and gonorrhea are bacterial, they can be treated fairly easily with antibiotics.

Herpes and human papillomavirus (HPV) are two other STDs. Both can be spread through the same sexual contact as chlamydia and gonorrhea, but they can also spread through skin-to-skin contact (including skin not covered by a condom). People who get herpes may experience outbreaks of painful sores, and those with HPV may get genital warts. People with

herpes are more likely to get HIV if they are exposed to it. People who contract certain types of HPV can get cervical cancer or various other cancers (including penis, vagina, or head and neck cancers). Because herpes and HPV are viral, they cannot be cured, but antiviral drugs can help suppress the sores or warts associated with each STD.

The only way to completely eliminate the chance of getting an STD is to abstain from sexual activity. In reality, many people choose to engage in sexual activity and so need to consider how to reduce their risk. Fortunately, using latex condoms helps to protect against many sexually transmitted diseases because they minimize the spread of bodily fluids during sexual activity.

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