Many unhealthy behaviors such as smoking, excessive alcohol consumption, unhealthy diets, unprotected sex, and insufficient physical exercise are modifiable, and severe health problems arising from such behaviors can thus be prevented. Health promotion campaigns often try to motivate people to change their unhealthy behaviors by providing them with information about the health problems associated with the behavior in question, and recommendations on how to avoid these negative health consequences. Nevertheless, each year millions of people die from lifestyle-related diseases that could have been prevented (World Health Organization, 2002), suggesting that health campaigns may not always be effective. Are we simply stupid when disregarding important health information, or is there a basic human tendency that can account for this?

When faced with information that links specific behaviors to increased risk for health problems, people often become very creative in dealing with this discomforting information. For instance, the regular pub visitors among us who often “forget” how much they have drunk, may deal with health information containing evidence that excessive alcohol consumption causes severe liver problems by defensively arguing that this information is “exaggerated” or “too extreme”, and “does not apply to them”. Consequently, they are less likely to accept this health information and probably continue with their unhealthy drinking practices. Indeed, research shows that people most at-risk for the targeted outcomes are often the least persuaded (e.g., Croyle, Sun, & Hart, 1997; Kunda, 1987; Liberman & Chaiken, 1992). From the perspective taken in this dissertation, people at-risk respond like this because they are driven by a basic human tendency to protect their positive self-image as a good and
sensible person that is threatened by the health information. This proposition follows from self-affirmation theory (Steele, 1988).

According to self-affirmation theory (Steele, 1988), people are highly motivated to protect and maintain a global sense of self-integrity, a view of themselves as “adaptively and morally adequate” (p. 262). Health information arouses this motive among people targeted by the information, and hinders acceptance of such information, as this basically requires them to admit they are behaving in a maladaptive and inadequate way. By responding defensively to the threatening health information, people can settle this issue and secure their global sense of self-integrity without giving up their unhealthy behavior. An important prediction from self-affirmation theory is that if people can restore their global sense of self-integrity by drawing upon alternative self-resources unrelated to the specific threat (i.e., “self-affirm”), they should be less likely to respond defensively to the threatening health information and more likely to accept the information. Steele’s (1988) self-affirmation theory thus not only explains why people at-risk respond defensively to health information, but is also promising for designing more effective health promotion messages (Harris, Mayle, Mabbott, & Napper, 2007).

Self-affirmation has been a topic of interest in several studies on health persuasion (e.g., Harris & Napper, 2005; Reed & Aspinwall, 1998; Sherman, Nelson, & Steele, 2000). While these studies confirmed that self-affirmation can increase acceptance of threatening health information, no research to date examined how self-affirmation affects the processing of threatening health information. Moreover, little is known about potential factors that moderate the effect of self-affirmation on health information processing. Thus, there may be boundary conditions to the positive effects of self-affirmation, under which self-affirmation is ineffective or even backfires. Insight into these processes may help us to develop a better understanding of how and when self-affirmation makes people more responsive to threatening health information. In this dissertation, it will be argued that the level of self-threat people
experience is an important variable in determining the impact of self-affirmation on health information processing.

In the present dissertation we will therefore focus on the following question: How does self-affirmation affect the processing of threatening health information? In this chapter we begin with a brief overview of how people process and respond to health risk information in general. Then we provide an overview of self-affirmation theory and review research on health persuasion that used this theory as a framework. Next, we turn to the issue of how self-affirmation affects the processing of threatening health information. Specifically, we propose empirical and theoretical arguments that the effect of self-affirmation on health information processing is likely to vary as a function of the level of self-threat people experience when faced with threatening health information. We will argue that self-threat level is an important variable in determining when self-affirmation makes people more or less responsive to threatening health information. Finally, we present an overview of the empirical chapters that describe the research in which we tested our theoretical analysis.

**The Role of Threat in Health Persuasion**

Several theories have been proposed to explain the effects of health risk information on persuasion. Early theorizing proposed that health risk information arouses fear which operates as a drive, and that people adopt attitudes and behaviors advocated by the information if they are effective in reducing fear (e.g., Hovland, Janis, & Kelley, 1953). Later theories, such as the parallel response model (Leventhal, 1970), protection motivation theory (Rogers, 1975, 1983), and the extended parallel process model (Witte, 1992) focused on the cognitive processes instigated by health risk information. One of the notions these models have in common is that people will only be motivated to process health risk information if they experience some threat. Threat reflects people’s perceptions of vulnerability to and
severity of a health risk (e.g., Rogers, 1975; Rosenstock, 1974; Witte, 1992). Importantly, research has shown that once severity has reached a certain level, outcomes are solely determined by perceptions of vulnerability (i.e., a concept similar to personal relevance; Das, De Wit, & Stroebe, 2003; De Hoog, Stroebe, & De Wit, 2005; Kruglanski & Klar, 1985; Weinstein, 1988). Thus, however severe a health risk, it is unlikely that people will experience a threat unless they are personally vulnerable to the health risk. For instance, although cancer is perceived as a very severe health risk, without feeling vulnerable to this risk, it is unlikely that people experience it as a threat. Another notion these models have in common is that perceptions of threat will only result in changes in attitudes and behavior if people believe that the recommendation is effective in reducing the threat (i.e., response-efficacy), and if they feel able to perform the recommended action (i.e., self-efficacy).

In sum, the aforementioned models imply that cognitive processes instigated by health risk information (i.e., perceptions of vulnerability, severity, response efficacy, and self-efficacy) play a pivotal role in persuasion (e.g., Rogers, 1983; Witte, 1992). However, none of them specifies clear predictions about the nature of information processing, and therefore, insight into how people process health risk information remained lacking (De Wit, Das, & De Hoog, 2007).

The nature of information processing can be derived from dual-process theories of attitude change, such as the Elaboration Likelihood Model (Petty & Cacioppo, 1986) and the Heuristic-Systematic Model (Chaiken, 1980, 1987), enabling researchers to focus on the processing of health risk information as well as on persuasive outcomes. According to dual-process theories, health risk information can either result in motivating people to engage in extensive, careful (accurate) processing of the information, or induce a defense motivation state, ensuing biased information processing (Gleicher & Petty, 1992; Liberman & Chaiken, 1992). A defense motivation will be induced when an important self-concept (e.g., being
healthy) is threatened, and therefore most likely occurs when the health information is personally relevant (i.e., when people feel vulnerable to the health risk; e.g., Das et al., 2003). Unbiased or accuracy-motivated persons will carefully attend to information and recognize the merits (strong arguments) and demerits (weak arguments) of the information in order to draw the most accurate conclusion. In contrast, defense-motivated persons will not acknowledge the merits and demerits of the information, but process this information selectively, in a way that is congruent with their own beliefs. As one’s health can be regarded as an important self-concept (e.g., see Chaiken, Giner-Sorolla, & Chen, 1996; Sherman & Cohen, 2006), increased personal relevance of health information is likely to result in a defense motivation. Consistent with this, research has shown that people who are at-risk for or feel vulnerable to the targeted outcome – those for whom the information is highly relevant – defensively process threatening health information, often resulting in decreased persuasion.

In a study by Jemmott, Ditto, and Croyle (1986), for instance, participants were either led to believe that they had a (bogus) medical condition called “TAA deficiency” (high personal relevance) or that they did not suffer this medical condition (low personal relevance). High-relevance participants were found to downplay the seriousness of the health risk: they rated the disorder as less serious than those who believed they did not possess the medical condition. In a related study, all participants were led to believe that they had a medical condition (“TAA positivity”), but were either told that this condition had healthy or unhealthy consequences (Ditto & Lopez, 1992). Participants who thought that the medical condition had unhealthy consequences reported more life irregularities that could have influenced their test result and derogated the accuracy of the health test more than those who believed the medical condition had healthy consequences.

In another study, participants were exposed to health information linking caffeine consumption and severe health problems (Kunda, 1987). Heavy caffeine consumers (i.e.,
high-relevance participants as they are at-risk for the targeted outcome) were less likely to accept that there was a link between caffeine consumption and health problems than light caffeine consumers (i.e., low-relevance participants). Using a similar paradigm, Liberman and Chaiken (1992) also found that high-relevance participants believed the link between caffeine consumption and health problems less than low-relevance participants. Moreover, the cognitive processing measures used in this study revealed that high-relevance (vs. low-relevance) participants were more critical of portions of the message that confirmed the link, and less critical of portions of the message that disconfirmed the link. Similarly, research has shown that high-relevance participants better remember risk-disconfirming information (Reed & Aspinwall, 1998).

Although defensive processing of threatening health information is likely to keep worries at a safe distance, it may also prevent people from protecting their personal health. Defensive processing of relevant health information thus presents an obstacle for health campaigns, and more insight into the origins of this increased defensiveness is needed in order to increase the effectiveness of these campaigns. Several researchers adopted self-affirmation theory (Steele, 1988) as a framework to make people less defensive and more accepting of threatening health information (e.g., Harris & Napper, 2005; Reed & Aspinwall, 1998; Sherman et al., 2000). The present dissertation aims to provide further insight into this topic. Before discussing the specific aims of the research reported in this dissertation, we will first provide an overview of self-affirmation theory and review research on health persuasion that used self-affirmation theory as a framework.

Self-Affirmation Theory

Self-affirmation theory (Aronson J., Cohen, & Nail, 1999; Sherman & Cohen, 2002, 2006; Steele, 1988) is a general theory about how people deal with self-threats. Its basic
premise is that people are highly motivated to protect and maintain a global sense of self-integrity. Self-integrity can be characterized as the sense that, overall, people see themselves as “adaptively and morally adequate” (Steele, 1988, p. 262), that is, as a “good and appropriate person” (Sherman & Cohen, 2006, p. 186). This sense of self-integrity depends on people’s perceptions of meeting their desired self-concepts and images in domains that are central to how people see themselves.

Central domains can include a person’s values (e.g., being kind to other people or being religious), social identities (e.g., being a good group member), roles (e.g., being a good parent), central beliefs (e.g., being very liberal), and goals (e.g., being healthy or successful at work) (Sherman & Cohen, 2006). The self-concepts and images in these central domains constitute people’s self-system, that is, a larger cognitive network that consists of self-representations of a person’s motives, goals, needs values and autobiographical experiences (Koole & Kuhl, 2003). Self-integrity is endangered when an important self-concept or image (i.e., the self-system) is threatened. For instance, exam failure could threaten a person’s self-concept as an intelligent individual, and a positive screening test for a disease could threaten a person’s self-concept as a healthy individual (Sherman & Cohen, 2006). Self-affirmation theory proposes that such self-threats motivate people to restore their global sense of self-integrity.

One direct way to satisfy this motive is to respond defensively to threatening information (Sherman & Cohen, 2002). By downplaying, minimizing, or avoiding threatening information people are able to restore and maintain their self-integrity. For instance, a person can maintain his or her self-concept as a healthy individual by dismissing negative health information. The drawback of such self-integrity restoring responses is that it may keep people away from personally relevant information (e.g., about one’s health). However, self-
affirmation theory proposes an alternative that allows people to restore the integrity of the self as well as to consider threatening information without relapsing into defensive responding.

Because people are concerned with their global sense of self-integrity, they can also restore self-integrity by drawing upon alternative self-resources that are unrelated to the provoking threat, such as reflecting upon an unrelated but important self-aspect (Steele, 1988). This enables people to view the threat within a “broader, larger view of the self” (Sherman & Cohen, 2006, p. 189) and to cope with the specific threat without freezing on its implications for self-integrity. By focusing on self-integrity domains unrelated to the threat, people realize that their sense of self-integrity does not solely depend on the appraised implications of the provoking threat (Sherman & Cohen, 2006). Thus, when threatened in one domain (e.g., health), people can restore their global self-integrity by affirming another important domain (e.g., social skills). This type of “self-affirmation” restores global self-integrity, thereby reducing the need to respond defensively to the specific threat. Consequently, people can consider the threatening information in a more open-minded manner. For instance, a heavy alcohol consumer may derogate health information linking excessive alcohol consumption and severe liver problems in order to maintain a self-view as a good and sensible person. However, if being social is a valued self-aspect for this person, thinking about past acts of kindness also enables this person to maintain a positive self-view. The motivation to protect and maintain a global sense of self-integrity aroused by the health information can thus be satisfied by providing the heavy alcohol consumer the opportunity of reflecting upon his or her social skills. Because this settles the self-integrity issue it should reduce the heavy alcohol consumer’s need to respond defensively to the threatening health information.

Research has confirmed the relevance of self-affirmation processes across a wide variety of domains and research paradigms (for a review, see Sherman & Cohen, 2006).
Typically, the self-affirmation procedure involves that people are asked to identify an important value or aspect of life, and subsequently are given the opportunity to reflect upon this self-relevant aspect by letting them think or write about it, or by presenting them a short list of questions accompanied with an answer scale that enables people to assert the personal importance of this self-relevant aspect (McQueen & Klein, 2006). Self-affirmation procedures like this have been found to reduce defensiveness in, for instance, dissonance reduction (Aronson J., Blanton, & Cooper, 1995; Steele & Liu, 1983; Stone, Wiegand, Cooper, & Aronson, 1997), attribution (Liu & Steele, 1986), social comparison (Schwinghammer, Stapel, & Blanton, 2006; Tesser & Cornell, 1991), prejudice (Fein & Spencer, 1997), terror management (Schmeichel & Martens, 2005), and group-serving judgments (Sherman & Kim, 2005). The prediction that self-affirmation reduces defensiveness has also been supported in the domain of health persuasion. This research will be reviewed below.

Self-Affirmation and Health Persuasion: Empirical Evidence

In the first empirical study on self-affirmation theory in the health domain, Reed and Aspinwall (1998) offered light and heavy caffeine consumers (i.e., low and high relevance participants) the opportunity to examine risk-confirming, risk-disconfirming, and risk-neutral information about the link between caffeine consumption and health problems (cf. Kunda, 1987; Liberman & Chaiken, 1992). Before exposure to this information, participants either completed a self-affirmation task or a control task. Self-affirmed, high-relevance participants (vs. their non-affirmed counterparts) attended more quickly to the risk-confirming information, and rated this information as more convincing than the risk-disconfirming information. Moreover, they recalled less risk-disconfirming information at a one-week follow-up. However, other findings were not consistent with the idea that self-affirmation reduces defensive responses to threatening health information. For instance, self-affirmed and
non-affirmed participants did not differ in their acceptance of the link between caffeine consumption and health problems. More problematic was the finding that self-affirmed, high-relevance participants reported lower intentions to reduce their caffeine consumption than their non-affirmed counterparts, even though they reported higher levels of self-efficacy. Thus, although this initial study found evidence that self-affirmation can reduce defensiveness when faced with threatening health information, not all findings were fully consistent with this idea. However, later studies provided strong support for the assumption that self-affirmation indeed reduces defensive responses to threatening health information.

Using a similar caffeine consumption paradigm, Sherman et al. (2000, Study 1) demonstrated that self-affirmed, high-relevance participants were more likely to accept the threatening health information linking caffeine consumption and health problems, and reported greater intentions to reduce their caffeine consumption than high-relevance participants who were not self-affirmed. Sherman et al. (2000, Study 2) also found that, among sexually active participants, self-affirmation increased perceptions of personal risk for contracting HIV after watching a threatening AIDS educational video. In another study, female participants (light vs. heavy alcohol consumers) were exposed to a health-promotion leaflet describing the risk of developing breast cancer from excessive alcohol consumption (Harris & Napper, 2005). Prior to reading the health information, participants either wrote a brief essay about their most important value (self-affirmation condition) or least important value (control condition). Among high-relevance participants (i.e., heavy alcohol consumers), self-affirmation increased personal risk perceptions for breast cancer, made it easier to imagine developing this disease, and positively affected intentions to reduce alcohol consumption. Moreover, the impact of self-affirmation on risk perceptions and the ease with which high-relevance participants could imagine themselves developing the targeted outcome remained stable over a period of one month.
Other research has also demonstrated the beneficial effects of self-affirmation on people’s responses to threatening health information. Among smokers who were exposed to threatening information about the risks of smoking, self-affirmation increased message acceptance and intentions to quit, especially among those at higher risk (i.e., participants who smoked a high number of cigarettes per day) (Armitage, Harris, Hepton, & Napper, 2008). Likewise, self-affirmation decreased smokers’ defensiveness to graphic warning labels on cigarette packs (Harris et al., 2007). After viewing the threatening images, self-affirmed smokers evaluated the images as more threatening and personally relevant, and reported more negative attitudes toward smoking than non-affirmed smokers. Furthermore, self-affirmation increased smokers’ intentions to reduce their cigarette consumption, and increased their perceptions of self-efficacy and behavioral control. Similarly, Jessop, Simmonds, and Sparks (in press) have demonstrated increases in response-efficacy, self-efficacy, positive attitudes toward sunscreen use, and intentions to use sunscreen among self-affirmed sunbathers after exposure to information about the health risks of sunbathing.

As outlined above, research consistently found that self-affirmation can positively affect health-related cognitions following exposure to threatening health information. However, to what extent does this imply that people show subsequent health behavior change following self-affirmation? In their second study, Sherman et al. (2000) found that after viewing the threatening AIDS educational video, self-affirmed participants purchased more condoms and took more AIDS educational brochures than participants who were not given the opportunity to self-affirm. Likewise, research has shown that, relative to their non-affirmed counterparts, self-affirmed smokers took more leaflets about how to quit smoking (Armitage et al., 2008), and self-affirmed sunbathers more often requested a free sample of sunscreen (Jessop et al., in press) following exposure to health risk information about respectively smoking and sunbathing. These findings are promising in that they provide
evidence that self-affirmation can motivate people to take pre-behavioral steps necessary to make actual behavior possible. However, they do not provide evidence that these participants subsequently practiced safer sex, quit smoking, or used sunscreen (cf. Epton & Harris, 2008; Harris et al., 2007).

To date, evidence that self-affirmation promotes actual behavior change is limited. Reed and Aspinwall (1998) found no effect of self-affirmation on self-reported caffeine use at a one-week follow-up. Other studies also did not find differences between self-affirmation and control conditions in self-reported alcohol consumption after one week or one month (Harris & Napper, 2005), or self-reported cigarette consumption one week later (Harris et al., 2007). Instead of focusing on reducing detrimental health behaviors, one recent study examined the impact of self-affirmation on changing a health-promoting behavior (Epton & Harris, 2008). Prior to reading information about the health benefits of fruit and vegetable consumption, participants either completed a self-affirmation or control task. The researchers assessed perceived response-efficacy, self-efficacy, and intentions directly after participants read the health message, and examined participants’ subsequent fruit and vegetable consumption using a 7-day diary measure. Self-affirmation increased perceptions of self-efficacy and response-efficacy. Moreover, self-affirmed participants reported eating more portions of fruit and vegetables than did those who had not self-affirmed; this effect did not diminish over time, and was mediated by the increase in response-efficacy.

In sum, there is compelling evidence that self-affirmation motivates people to take pre-behavioral steps, and promising evidence that self-affirmation can encourage health-promoting behavior change. However, effects on other types of behaviors have not been established yet. No evidence has been found that self-affirmation reduces health-detrimental behaviors, nor have studies examined the impact of self-affirmation on screening or detection behaviors.
However, the research reviewed above clearly demonstrates that self-affirmation reduces defensive responses to threatening health information. People’s motivation to protect and restore self-integrity aroused by the threatening health information was satisfied through affirming an unrelated but important self-aspect. Consistent with the prediction of self-affirmation theory, affirming these global perceptions of self-integrity enabled people to focus on the informational value of the health information rather than on its implications for self-integrity (Sherman & Cohen, 2006). As a result, people who typically would have engaged in defensive responding to the threatening health information were more likely to engage in adaptive responding to the health information.

**Self-Affirmation and Health Persuasion: Unanswered Questions**

Despite the abundance of evidence that self-affirmation can reduce defensive responses to threatening information, little is still known about 1) the cognitive processes that mediate self-affirmation effects, and 2) factors that moderate the effect of self-affirmation on the cognitive processing of threatening information. Translated to the domain of health persuasion: there is ample support for the prediction that self-affirmation increases *acceptance* of threatening health information, however, insight into how self-affirmation affects the *processing* of threatening health information remains lacking. Does self-affirmation make people consider threatening health information more carefully? Are arguments supporting the health information evaluated on their merits and demerits, leading self-affirmed people to draw the most accurate conclusion that follows from the threatening information? Is it easier to memorize threatening aspects of the health information following self-affirmation? A better insight into these processes is pivotal in increasing our understanding of *how* self-affirmation makes people more responsive to threatening health information.
According to self-affirmation theory (Steele, 1988), when global perceptions of self-integrity are restored through affirming an important self-aspect unrelated to the provoking threat, people should be more likely to carefully attend to and think about the (de)merits of the threatening information. Thus, self-affirmation should increase extensive, careful processing of threatening health information. Despite the established positive effects on persuasive outcomes following exposure to threatening health information, there has been no direct evidence to date that self-affirmation increases extensive, careful processing of threatening health information. Therefore, the first aim of this dissertation is to examine how self-affirmation affects cognitive processing of threatening health information.

Moreover, the conditions under which self-affirmation positively affects health information processing and results in adaptive responses has not been specifically addressed in previous research. There may be boundary conditions to the positive effects of self-affirmation, under which self-affirmation is ineffective or even backfires. A better insight into these processes is pivotal in increasing our understanding of when self-affirmation makes people more responsive to threatening health information. We will argue that the impact of self-affirmation on information processing will vary as a function of the level of self-threat people experience when faced with threatening health information. Thus, the second aim of this dissertation is to examine the moderating role of self-threat level regarding the impact of self-affirmation on the processing of threatening health information. This hypothesis is based on theoretical arguments as well as earlier empirical work within the self-affirmation framework. In the following paragraphs, we discuss this prior work and identify level of self-threat as a potential moderating variable. We will propose that self-affirmation increases extensive, careful information processing under moderate self-threat conditions, but decreases extensive, careful processing of threatening health information under low and high self-threat conditions. This idea is the core proposition of this dissertation.
Self-Affirmation and Information Processing

Whether people engage in extensive, careful information processing can be assessed at the explicit level by varying the quality of the arguments in a message and by examining the impact of these arguments on people’s attitudes toward the information. When people differentiate between weak and strong arguments, dual-process theories suggest that they have carefully attended to and thought about the (de)merits of the message (Petty & Cacioppo, 1986). Thus, if self-affirmation increases extensive, careful information processing, self-affirmation should make people more sensitive to the quality of the arguments supporting the information. On the implicit level, the extent and carefulness of information processing can be inferred from the accessibility of topic-related cognitions. When global perceptions of self-integrity are affirmed, it should be easier to encode threatening aspects of the information because these aspects no longer pose a threat to people’s self-integrity. Because information that is better encoded should be easier retrieved from memory (i.e., more accessible; Ashcraft, 2006; Carlston & Smith, 1996; Higgins, 1996), self-affirmation should increase the accessibility of threat-related cognitions. Although self-affirmation has been posited to increase extensive, careful information processing (Steele, 1988), only a few studies have employed the above mentioned methods or measures that provide insight into the impact of self-affirmation on cognitive processing. Unfortunately, none of these studies employed a health topic, but they do show the utility of these methods and measures.

Two recent studies examined the effect of self-affirmation on explicit information processing by manipulating the quality of the arguments in a message. Briñol, Petty, Gallardo, and DeMarree (2007) manipulated the quality of the arguments in an advertisement about a phone. Participants read and evaluated this advertisement and reported their attitudes toward the product. Self-affirmation prior to reading this message increased participants’ confidence in their current views and made them less sensitive to the quality of the arguments than their
non-affirmed counterparts. Self-affirmation thus decreased extensive, careful information processing. Correll, Spencer, and Zanna (2004) manipulated the quality of the arguments in a discussion about a tuition raise. Participants against a tuition raise watched a videotaped discussion and evaluated the persuasiveness of the arguments. It was found that self-affirmed participants were more sensitive to the quality of the arguments than their non-affirmed counterparts, particularly if this issue was important for them. Here, self-affirmation increased extensive, careful information processing.

Other studies have shown how self-affirmation affects implicit cognitive processes in the face of self-relevant threats by examining the accessibility of topic-related cognitions. Koole, Smeets, Van Knippenberg, and Dijksterhuis (1999) provided participants with failure feedback information on an alleged IQ test and found that self-affirmation decreased the cognitive accessibility of threat-related cognitions. Likewise, self-affirmation has been shown to reduce the accessibility of death-related cognitions after a mortality salience manipulation (Schmeichel & Martens, 2005) and of social rejection thoughts in a threatening social situation (Schimel, Arndt, Banko, & Cook, 2004). In these studies, self-affirmation thus decreased extensive, careful information processing.

The above reviewed studies illustrate how we can examine the effect of self-affirmation on information processing. However, it remains unclear how self-affirmation affects health information processing. All of these studies employed topics unrelated to health, and either assessed information processing on the explicit or implicit level by manipulating the quality of the arguments in the information or measuring the accessibility of topic-related cognitions, respectively. In this dissertation we will systematically examine the impact of self-affirmation on the processing of threatening health information on both the explicit and implicit level.
Self-Affirmation and Information Processing: The Moderating Role of Self-Threat Level

The research described in the previous section revealed that self-affirmation can affect cognitive processing in two different ways. In some instances, self-affirmation increased extensive, careful information processing (Correll et al., 2004); in other instances, self-affirmation decreased extensive, careful information processing (e.g., Briñol et al., 2007; Koole et al., 1999). We propose that these divergent findings may be explained by variations in the level of self-threat. Learning that one has failed on an IQ test (Koole et al., 1999), or a confrontation with perhaps the biggest threat to self-integrity – death (Schmeichel & Martens, 2005), poses a greater threat to the self than a potential tuition raise for students (Correll et al., 2004). A tuition raise, in turn, poses a greater self-threat than a message about a cell phone (Briñol et al., 2007). Thus, advancing that the level of self-threat moderates the impact of self-affirmation on the processing of self-threatening information, self-affirmation may increase extensive, careful information processing under conditions of moderate self-threat, whereas it may decrease extensive, careful information processing under conditions of low and high self-threat. Focusing on the impact of self-affirmation in settings that are threatening to the self, the hypothesized moderating role of self-threat level is sound with the basic premise of self-affirmation theory (i.e., that people are primarily concerned with global self-integrity).

According to self-affirmation theory, self-affirmation makes self-resources cognitively accessible (or puts the self-system "on-line"; cf. Steele, Spencer, & Lynch, 1993) and enables people to view the threat within a “broader, larger view of the self” (Sherman & Cohen, 2006, p. 189). Put differently, self-affirmation stimulates integration of the threat into the self-system, that is, a larger cognitive network that consists of self-representations of a person’s motives, goals, needs, values and autobiographical experiences (cf. Koole & Kuhl, 2003). This integration into a larger view of the self enables people to cope with a threat without freezing on its implications for self-integrity (cf. Sherman & Cohen, 2006). As a
consequence, self-affirmation increases extensive, careful processing of threatening information. It is important to keep in mind, however, that the ultimate goal of self-affirmation is not to increase extensive processing of a particular threat, but to restore the general integrity of the self (Steele, 1988). In this perspective, extensive, careful information processing should be seen as a fortunate by-product of self-affirmation.

Self-affirmation theory further predicts that there are limits to the effects of self-affirmation. When the level of self-threat exceeds a given self-affirmation, self-affirmation may become ineffective in restoring the general integrity of the self (Steele, 1988, p. 291). In these conditions, the fortunate by-products of self-affirmation will also cease to occur, and self-affirmation will become ineffective in promoting extensive, careful information processing. Moreover, when self-resources are not of sufficient magnitude to cope with a threat, self-affirmation may actually reinforce concerns over self-integrity, rather than diminish them, and may thus backfire on information processing. This effect occurs because self-affirmation puts the entire self-system “on-line”, thus making the entire self-system vulnerable to a severe threat that it is unable to cope with. For high levels of self-threat, self-affirmation thus ironically adds to the problem by increasing concerns over self-integrity (see also Crocker, 2002; Crocker & Park, 2004). In these conditions, self-affirmation is likely to decrease extensive, careful information processing in the service of self-integrity maintenance (Koole, 2004; Nowak, Vallacher, Tesser, & Borkowski, 2000; Sedikides & Green, 2004).

The question whether this decrease in extensive, careful processing for high levels of self-threat is good or bad news remains a matter of perspective, and ultimately depends on the research question (i.e., dependent variable) of interest. For instance, when self-affirmation decreases extensive processing, people ruminate less about a failure experience (Koole et al., 1999) and are less likely to derogate someone who has violated one’s worldview (Schmeichel & Martens, 2005). When it comes down to personally important health information, however,
people are less likely to benefit from a decrease in extensive, careful information processing. Less careful consideration of threatening health information may render people less likely to evaluate arguments supporting the health information on their merits and demerits. Consequently, this may prevent people from drawing the most accurate conclusion that follows from the health information. Thus, self-affirmation may have an adverse effect when self-threat levels become severely high, as it may decrease extensive, careful processing of threatening health information.

**What Constitutes a High Self-Threat?**

Prior self-affirmation research has focused on a broad range of self-threats (e.g., see Sherman & Cohen, 2006) that, in all probability, have ranged from relatively low or moderate (e.g., a tuition increase) to very severe (e.g., death). However, no study explicitly assessed whether self-threat level moderates the effects of self-affirmation.

In the health domain, self-threat level is conceptualized as perceptions of vulnerability to and severity of a health risk (e.g., Rogers, 1975, 1983; Rosenstock, 1974). Importantly, research has shown that once severity has reached a certain level, outcomes are solely determined by perceptions of vulnerability (Das et al., 2003; De Hoog et al., 2005; Kruglanski & Klar, 1985; Weinstein, 1988). Thus, however severe a health risk, it is unlikely that people will perceive a threat to the self unless they are personally vulnerable to the health risk. Vulnerability thus constitutes the key determinant of level of self-threat in the health domain. Vulnerability can either be classified on *measurements* of perceived vulnerability or actual behavior (such as the amount of caffeine or alcohol consumption; e.g., Harris & Napper, 2005; Sherman et al., 2000), or *manipulated* by providing participants with false feedback regarding their vulnerability level (such as bogus test results; e.g., Das et al., 2003; De Hoog et al., 2005; Ditto & Lopez, 1992). The more people perceive themselves as vulnerable, the
greater the threat to the self. Moreover, the different methods to assess vulnerability levels (i.e., measurement vs. manipulation) provide us with a unique opportunity to create different levels of self-threat.

In particular, a measurement of vulnerability (e.g., comparing non-smokers with smokers) is likely to pose a lower threat to the self than when vulnerability is manipulated by providing participants with false feedback. This effect occurs because people with unhealthy lifestyles (e.g., smokers) learn to develop defensive strategies to deal with this continually activated dissonance-provoking behavior (see Gibbons, Eggleston, & Benthin, 1997, for evidence relevant to this assumption). This “minimization” of health threats following previous experience with a threat is underscored by research on desensitization (cf. Wolpe, 1982), and inoculation (cf. McGuire, 1968). In line with this minimization-account, measurements of vulnerability may therefore reflect only moderate feelings of vulnerability (i.e., moderate self-threat). In contrast, when vulnerability is manipulated by providing participants with false feedback that they have no previous experience with, it becomes much more difficult to discount one’s vulnerability, thus producing heightened feelings of vulnerability (i.e., high self-threat; cf. Loewenstein, Weber, Hsee, & Welch, 2001). This suggests that a manipulation of vulnerability is likely to bring forth a higher threat to the self than when vulnerability is not manipulated, but measured.

Previous research on self-affirmation in the health domain all employed the measurement method (e.g., Harris & Napper, 2005; Reed & Aspinwall, 1998; Sherman et al., 2000). Participants in these studies were divided in two conditions (i.e., people not at-risk vs. people at-risk) based on their actual behavior (e.g., non-coffee drinkers vs. coffee drinkers). Because the information linking a specific behavior (e.g., coffee drinking) to health problems was only relevant to participants at-risk (e.g., coffee drinkers), it was logically assumed that these participants experienced a self-threat whereas participants who were not at-risk (e.g.,
non-coffee drinkers) did not. According to our reasoning, these studies thus actually tested the impact of self-affirmation under low (i.e., participants not at-risk) and moderate self-threat levels (i.e., participants at-risk). No study on self-affirmation and health persuasion has employed a manipulation of vulnerability to create different self-threat levels. Thus, the impact of self-affirmation on health persuasion has not been tested under high self-threat levels yet. In the research reported in this dissertation we will use both methods, enabling us to test the impact of self-affirmation on health information processing under low, moderate, and high self-threat conditions. Moreover, in Chapter 3 we report a study that explicitly tested the assumption that a manipulation of vulnerability is likely to bring forth a higher threat to the self than when vulnerability is not manipulated, but measured.

Summary and Overview of the Present Dissertation

Previous research has shown that self-affirmation reduces defensive responses to threatening health information. However, little is still known about 1) the cognitive processes that mediate self-affirmation effects, and 2) factors that moderate the effect of self-affirmation on the cognitive processing of threatening health information. A better insight into these processes is pivotal in increasing our understanding of how and when self-affirmation makes people more responsive to threatening health information. The primary objective of the research reported in this dissertation is to fill this gap by examining the impact of self-affirmation on health information processing. The central question running through this dissertation is therefore the following: How does self-affirmation affect the processing of threatening health information?

It is proposed that the effect of self-affirmation on health information processing is likely to vary as a function of the level of self-threat people experience when faced with threatening health information. More specifically, we predicted that self-affirmation increases
Chapter 1

extensive, careful information processing under moderate self-threat conditions, and decreases extensive, careful processing of threatening health information under low and high self-threat conditions. In the research reported in this dissertation, self-threat level has been conceptualized as participants’ vulnerability to a health risk. In the chapters that follow (Chapters 2-5), empirical studies that were designed to address the central question of this dissertation are reported. Finally, Chapter 6 summarizes the empirical findings reported in the preceding chapters and considers its implications and contributions. Additionally, Chapter 6 raises some limitations of the research reported in this dissertation and provides directions for future research. Below we present a brief overview of the empirical chapters. Note that because these chapters are written as separate chapters, they can be read independently from other parts of the dissertation. At the same time, this means there is some overlap between the content of these chapters.

In Chapter 2, we report one study that examined the impact of self-affirmation on the processing of threatening health information under low and moderate self-threat conditions (Study 2.1). Information processing was assessed by measuring participants’ level of message derogation, that is, an explicit measure of defensive information processing (Witte, 1992). We predicted that self-affirmation would decrease message derogation under moderate self-threat conditions (i.e., for participants at-risk). In line with the observation that self-affirmation can reduce the motivation to process information when participants do not feel particularly threatened (Briñol et al., 2007), we predicted that self-affirmation would not affect message derogation under low self-threat conditions (i.e., for participants not at-risk). In addition, this study investigated the impact of self-affirmation on screening behavior. While there is some evidence that self-affirmation can positively affect health-promoting behavior (Epton & Harris, 2008), no study to date has tested whether self-affirmation can promote screening or detection behavior.
In Chapter 3, we report three studies that examined the impact of self-affirmation on the processing of threatening health information under low, moderate, and high self-threat conditions. Study 3.1 tested the assertion that a manipulation of vulnerability to a health risk induces a higher threat to the self than when vulnerability is measured. In addition, this study provided an initial test of our main hypothesis regarding the effect of self-affirmation on information processing. Studies 3.2 and 3.3 examined the cognitive processes following self-affirmation under different self-threat levels in more detail, by including a manipulation of argument quality in the health message, and by measuring participants’ cognitive responses (Study 3.3) and attitudes (Studies 3.2 & 3.3). Past research has shown that extensive, careful information processing is indicated by a significant differentiation between strong and weak arguments in a message, whereas less thorough processing is implied when this differentiation is absent on the dependent measures (Petty & Wegener, 1999). It was hypothesized that self-affirmation would increase sensitivity to the quality of the arguments in the health information under moderate self-threat conditions. In contrast, we hypothesized that self-affirmation would decrease sensitivity to argument quality under low and high self-threat conditions.

The information processing measures used in the preceding chapters (i.e., message derogation, cognitive responses, and attitudes) required participants to engage in a conscious retrieval process. To test whether we could replicate our previous findings using an information processing measure without any explicit reference to the self-threat, the studies reported in Chapter 4 tested the impact of self-affirmation on the accessibility of threat-related health cognitions by means of a lexical decision task. Increased (vs. decreased) extensive, careful processing of threatening health information following self-affirmation should make it easier (vs. more difficult) to encode threatening aspects of health information because these aspects no longer pose a threat to people’s self-integrity. Because information that is better
encoded should be easier retrieved from memory (i.e., more accessible; Ashcraft, 2006; Carlston & Smith, 1996; Higgins, 1996), we hypothesized that self-affirmation would increase the accessibility of threat-related cognitions under moderate self-threat conditions, and would decrease the accessibility of threat-related cognitions under low and high self-threat conditions. Study 4.1 tested the impact of self-affirmation on the accessibility of threat-related cognitions under low and moderate self-threat conditions, whereas Study 4.2 tested this under moderate and high self-threat conditions.

In Chapter 5, we report a final study that investigated the impact of self-affirmation on persuasive outcomes under moderate and high self-threat conditions. Following exposure to threatening health information, we measured participants’ attitudes toward the health message, intentions to take precautions, and behavior (i.e., requesting a health information leaflet). Previous self-affirmation studies in the health domain have shown positive effects of self-affirmation on such persuasive outcomes (e.g., Harris & Napper, 2005; Jessop et al., in press; Sherman et al., 2000). However, on the basis of our theoretical analysis, we predicted that this would be limited to conditions in which people experience a moderate threat to the self. Therefore, it was hypothesized that self-affirmation would increase persuasion under moderate self-threat conditions, and would decrease persuasion under high self-threat conditions.