Chapter 1. General Introduction
“The only way to keep your health is to eat what you don't want, drink what you don't like, and do what you'd rather not”

*Mark Twain (1835 - 1910)*

Health messages aimed at persuading people to alter unhealthy habits are highly prevalent in western societies. Examples of such health messages are television commercials about the potential risks of smoking, websites about the risks associated with insufficient fruit and vegetable consumption, and leaflets about the negative health consequences of unsafe sex. All these messages have in common that they remind people of the potential health risks of their own lifestyle or habits. Until now, the main focus in health communication research has been on the role of fear or physical threat in motivating people to adopt a healthy lifestyle. For example, classic fear appeal theories such as the Drive Reduction Model (Hovland, Janis, & Kelley, 1953), Protection Motivation Theory (Rogers, 1983), and Parallel Response Model (Leventhal, 1970) specify information on the severity of the negative outcomes and people’s susceptibility to the negative outcomes as the elements in health messages that are effective in motivating health behavior change. Based on these theories, health messages are expected to motivate people to alter their health habits because they emphasize the risks and dangers associated with unhealthy habits. People’s physical health is portrayed as the core motivator of behavior change – that is, people want to maintain good physical health and act healthy to avert the physical threat. However, human behavior is not only governed by concrete actual or anticipated objective states, such as physical health or illness. Behavior can also be determined by more symbolic psychological motives. Specifically, the motive of preserving or enhancing a positive self-image is a powerful and prevalent cause of behavior. This self-perspective is commonly applied in social psychology in general. For example, the Self-evaluation Maintenance Model (Tesser, 1988) proposes that the key motivator of people’s actions is the maintenance of a positive self-image. However, a self-perspective is still rarely used in the domain of persuasive health messages. I propose
that by putting the role of self-maintenance central, I can provide a more valid view of the processes that come into play when people read a health message. That is, a self-oriented view makes it possible to explain more phenomena in the domain of health communication and to predict more accurately the effects of health messages.

**Health Messages and Self-Threat**

Most people value health; health is considered important and people do not wish to become ill or die young (Arndt, Cook, Goldenberg, & Cox, 2007; Persson, Engström, Rydén, Larsson, & Sullivan, 2005). Thus, people have the goal of acquiring and maintaining good health. At the same time, however, many people endanger their own health, for example, by smoking, eating unhealthy foods, doing insufficient physical exercise, or having unsafe sex. Health messages remind people of the health risks they take by acting in certain ways, and they are more or less explicit in holding people responsible for the possible negative health outcomes. This sense of responsibility is implicitly present in all health campaigns; both the cause of the risk and the solution lie in the hands of the individual.

People’s unhealthy habits do not match their goal of maintaining good health. Health messages can, therefore, induce the conclusion that one acts in an inconsistent and inadequate way: setting a goal because it is basically important but at the same time violating it. This psychological state causes unpleasant emotions and is conceptualized as a self-threat (Steele, 1988). In general, people are motivated to eliminate this self-threat and to restore a sense of adequacy. Consequently, health messages that stress the negative consequences of unhealthy habits cause a self-threat but subsequently motivate people to restore a sense of self-integrity.

The presence of a self-threat due to confrontation with information that stresses the presence of negative self-inflicted health outcomes and the adaptive reactions this causes are the core of the current doctoral thesis (see Figure 1.1 for the general model). Thus, contrary to what traditional fear appeal theories claim, my position is that fear reduction is not people’s core motive in handling a health
message. How people react to health messages can better be explained by people’s aim to maintain a sense of self-integrity.

![Schematic model of the determinants of and adaptive reactions to self-threat in the domain of persuasive health communications.](image)

**Figure 1.1** Schematic model of the determinants of and adaptive reactions to self-threat in the domain of persuasive health communications.

It is important to note that health outcomes do not necessarily have to be very severe or physically threatening to cause a self-threat. All messages that stress self-inflicted negative outcomes of some sort can cause a self-threat. For example, health messages that stress that insufficient physical exercise causes diabetes, health messages that inform people about hearing damage due to exposure to loud music, as well as messages that stress the increased risk of getting cancer can all lead to a self-threat. The essence is that health messages pinpoint that people violate their own values (i.e., being/staying healthy). This makes people feel stupid for endangering their own health – that is, people’s selves are threatened. This negative feeling can be induced by reminding people of mild or serious negative outcomes. Of course, the risk of death and the risk of facing a non-fatal disease can lead to different levels of self-threat, but both have the potential to threaten people’s self-integrity.

Self-affirmation Theory (Steele, 1988) states that “cognitions that threaten the perceived integrity of the self [...] arouse a motivation to reaffirm the self, to reestablish a perception of global self-integrity” (p. 290). According to Steele (1988), people can display at least three
adaptive reactions to handle the unpleasant feeling induced by a self-threat: 1) people can alter unhealthy habits or form intentions to change unhealthy habits; 2) people can react defensively to the health message; or 3) people can apply self-affirmation (see Figure 1.1). Which option is used to restore their sense of self-integrity depends on the availability and effectiveness of the means.

The first option seems the most straightforward one – that is, adopt the recommendations mentioned in the health message or form an intention to do so (e.g., stop smoking tobacco, or start eating sufficient fruits and vegetables). Although this seems a sensible and effective way of handling a threat, people can have many reasons for not wanting to do it in this way. For example, smokers confronted with a health message that stresses the negative outcomes of smoking tobacco may believe that quitting smoking would not help to give them a more positive feeling – that is, they may believe that altering their habit is not an effective way to handle the self-threat. Or smokers may be so addicted to tobacco that quitting smoking is simply not an available option to handle the self-threat. Therefore, many people seem to handle a self-threat by using the second adaptive reaction; they process the message defensively (e.g., Kunda, 1987; Liberman & Chaicken, 1992). That is, people read the message in a biased way, make counterarguments, or simply deny its truth. This defensive processing prevents people from being fully confronted by information about self-inflicted negative outcomes. Thus, although the information is important to them because it is congruent with the strong value of health, they reject it. Like intention-formation, this option can be ineffective. The threat may be too potent to be suppressed, for example, because the health message is very intense or is repeated time after time.

Self-affirmation Theory (Steele, 1988) states that people can also aim to restore the perceived integrity of the self directly through self-affirmation. In essence, self-affirmation refers to the generation of positive self-images which are unconnected with the threatening event. People can do things to affirm themselves (to generate positive self-images), but in psychological research people can also be affirmed
using experimental manipulations (to generate positive self-images). Manipulations of self-affirmation that are induced in scientific laboratory settings entail activities that make salient important values unconnected with the threatening event, or make people reflect on important aspects of their life irrelevant to the threat (McQueen & Klein, 2006). For example, participants are provided with very positive feedback on a bogus questionnaire about their social skills before reading a threatening health message (Cohen, Aronson, & Steele, 2000). These self-affirmation procedures should make people realize that their self-worth is not determined by the evaluative implications of the immediate situation. The result of self-affirmation is that people become open-minded to the self-threatening information and no longer react defensively to the threatening information (e.g., Sherman & Cohen, 2002, 2006). Thus, self-affirmation makes people focus on valued domains of self-integrity unrelated to the threat. This lowers their need to protect their self-worth by reacting defensively, and makes them more open and realistic.

In sum, people can cope with a self-threat by increasing their intention to act healthy, by defensively processing the information, or by means of self-affirmation. All three options are interactive adaptive motives. This means, for example, that when people have changed their intentions in the direction that averts the negative outcomes, their need for maintenance of self-integrity is satisfied and they are no longer motivated to react defensively or affirm themselves in other ways.

**Self-Affirmation and Persuasion**

The above theorizing on the basis of Self-affirmation Theory about the three adaptive reactions mainly concerns people’s spontaneous reactions to self-threats. For example, a person may be confronted with a health message and cope with the self-threat by buying flowers for his partner to affirm his value of being romantic and considerate, which can be regarded as an adequate social behavior that has the power to restore the self. Thus, self-affirmation as a spontaneous behavior occurs after the threat. The affirmed psychological state may be viewed as a relaxed and open mindset, as the person feels highly adaptive and
adequate. There is no need to strongly regulate the incoming information; “the shields are lowered”. In research on persuasion participants are confronted with the health message precisely at this moment when their shields are lowered.

Several studies have been focused on the effects of self-affirmation procedures on persuasion in the domain of health. The expectations about the effects of self-affirmation in persuasion are based on a specific postulate of Self-affirmation Theory (Steele, 1988), namely,

"...self-affirming thoughts should make it easier to be objective about other self-threatening information; they should reduce the pressure to diminish the threat inherent in this information. In this way, self-affirming thoughts may be an effective means of reducing thought-distorting defense mechanisms such as denial or rationalization” (p. 290).

When people are presented with a text that stresses negative health outcomes, this is expected to induce a self-threat that they aim to reduce by reacting defensively. Self-affirmation procedures prevent this defensiveness, by forcing people to be open-minded. Consequently, the expected result of self-affirmation is an increase in persuasion (i.e., people are more inclined to form an intention to adopt the mentioned recommendations). Several researchers found this effect in the domain of health. For example, in a study by Sherman, Nelson, and Steele (2000) female participants read a health message about a link between caffeine consumption and breast cancer. The results showed that adding a self-affirmation procedure made participants more accepting of the information about breast cancer, and they also reported a stronger intention to change their behavior accordingly. In addition, Harris and Napper (2005) showed that self-affirmation increases participants’ intention to lower their level of alcohol consumption after being confronted with a health message about the negative consequences of heavy alcohol consumption. There are several more examples of studies
that show similar effects in the domain of health (for overviews, see Harris & Napper, 2005; McQueen & Klein, 2006).

Self-affirmation prevents people from using defensive information processing. This does not mean, however, that the self-threat is trivialized or that people simply become very agreeable (Correll, Spencer, & Zanna, 2004). There are strong indications that self-affirmation makes people painfully aware of the threat. For example, Harris and Napper (2005) found that self-affirmation not only increases people’s intentions to change their behavior, but also increases the negative emotions people feel when thinking about the risks of alcohol consumption. Furthermore, Harris, Mayle, Mabbott, and Napper (2007) showed that self-affirmation increased participants’ negative thoughts and emotions about smoking. These findings indicate that self-affirmation forces people to acknowledge the physical threat, causing negative emotions. In addition, Dijkstra (2009) showed that self-affirmation led smokers to evaluate themselves more negatively after being confronted with a health message. These data suggest that self-affirmation even forces people to acknowledge their self-threat. I assume that self-affirmation forces people to face the negative outcomes of their actions, whether these are physical outcomes or self-evaluative outcomes. Self-affirmation makes people increasingly aware of the self-threat that is present in a health message by weakening attempts to process health messages in a defensive manner. Or, as Harris and Napper (2005) state, self-affirmation does not lead to threat reduction but to threat acceptance. Consequently, after being self-affirmed people still need to handle the resulting self-threat in some way.

As mentioned above, intention-formation to cope with the threat is one frequent response that has been observed following a self-affirmation manipulation. However, the awareness of the threat may become too strong to accept when the self-affirmation manipulation weakens all remaining defensive emotion-regulation processes. In that case, another defensive reaction may occur. Such a defensive reaction may be observed as a low intention to change. Thus, depending on the
initial level of the threat, a self-affirmation procedure may lead to a higher or to a lower intention. In both cases, I assume that the forced open-mindedness is the cause. Logically, open-mindedness can only be induced when there is some level of closed-mindedness or defensiveness, or some other means of motivated regulation of the processing of information. Thus, a self-affirmation procedure is a diagnostic for the presence of self-related defensive processing or otherwise self motivated regulation of information processing.

**General Overview**

The current doctoral thesis focuses on the way people handle self-threats in the domain of health communication. In four chapters I will apply a self-integrity maintenance view (see Figure 1.1) to improve understanding of the processes that come into play when participants read a health message. Self-affirmation is used in all studies. The health messages that are used in the presented studies solely concern the physical risks associated with specific health behaviors. Self-threats in the domain of health communication will be investigated in three different ways. First, I will examine the influence of a moderator that determines the extent to which the information is related to people’s self, namely, involvement. That is, it will be examined how involvement in the domain of health influences the way people handle a self-threatening health message (Chapters 2 and 3). Second, I will investigate how individuals differ in their inclination to spontaneously think about positive self-images (cognitive self-affirmation inclination) when confronted with a health threat (Chapter 4). Third, I will focus on a specific health threat frequently mentioned in health messages, namely, cancer (Chapter 5). Self-affirmation is used as a diagnostic tool that helps to identify the ways people cope with the self-integrity threats induced by a health message.

The current chapter provides an overview of the following four chapters in this doctoral thesis and the 11 studies (1 cross-sectional study and 10 experimental studies) that I conducted. The chapters are divided in three parts. The first part concerns the interplay between self-threat
and involvement, the second part concerns individual differences in self-affirmation, and the third part concerns a specific health outcome, namely, cancer. Before discussing the different studies in the current doctoral thesis, I describe previous research outcomes and existing theoretical ideas pertaining to each of the three parts. These findings show what has already been done, what is known about self-threat and self-affirmation, and which questions have been left unanswered.

**Part 1: Health Messages and Involvement**

Two types of involvement are of primary importance in the context of persuasive communication: value-involvement and outcome-involvement (Johnson & Eagly, 1989). Value-involvement is defined as the association between the topic of a persuasive message and a person’s important values. For example, in the domain of health, a message on the negative consequences of unhealthy foods may relate to a person’s health values. To the extent that the person’s self-image or self-defining values include gaining and maintaining good health, this person is highly involved in the topic of the message. Another type of involvement is outcome-involvement. This is defined by the association between the topic of the persuasive message and a person’s current goals or outcomes. In the context of health messages, this means that a threatening health message does or does not apply to a person because of an objective relation between health outcomes and behavior (e.g., a message about testicular cancer is not relevant to a female recipient). Thus, outcome-involvement concerns the objective importance of a topic to an individual, but is less necessarily or centrally related to the self (Eagly, 2007). That is, outcome-involvement does not concern people’s core values and, therefore, people’s selves are less directly involved.

Owing to the different natures of the two types of involvement, they are expected to have opposite influences on the reactions of people to a threatening health message. Value-involvement concerns people’s core and self-defining values; messages that threaten these values are too threatening to accept, thus people react defensively. Outcome-involvement does not concern people’s selves so directly,
which makes it possible for people to accept the message. Thus, the two types of involvement relate to a different extent to people’s selves and, therefore, arouse different responses. So far, no research has been done in the field of persuasive health communication that was explicitly aimed at disentangling the influences of the two types of involvement. In the studies reported in Chapter 2 the effects of both types of involvement are compared; in Study 3 I focus on the role of value-involvement, and two types of health behaviors are contrasted. In addition, the findings reported in Chapter 3 show whether the lowering of immediate defensive reactions to a health message, caused by a self-affirmation procedure, translates into actual behavior after one month.

**Part 2: Individual Difference in Self-Affirmation**

In everyday life people are often confronted with self-threatening health messages, but they have many options at their disposal to affirm themselves. For example, they can buy flowers for their partner to affirm their value of being romantic and considerate. Or they can invite their handicapped neighbor for dinner to affirm their value of being sociable and generous. These options for self-affirmation are behavioral in nature. However, I expect that people can also affirm themselves cognitively. That is, people can have access to positive self-restoring images in the absence of a self-affirmation procedure (McQueen & Klein, 2006). This cognitive self-affirmation option should, like self-affirmation manipulations, force people to open-mindedly acknowledge health messages.

In the literature, several theories focus on people’s aim to maintain a positive self-image (for an overview, see Tesser, Crepaz, Collins, Cornell, & Bach, 2000). However, the explicit focus is mainly on the underlying mechanisms that may lead to this positive self-image. The most important model is Tesser’s (1988) Self-esteem Maintenance Model. This model emphasizes the social means that people can use to maintain self-integrity – that is, social comparison is the underlying mechanism to create positive self-images. In the current doctoral thesis I, however, focus directly on the spontaneous use of existing positive self-images.
I assume that people vary in the extent to which they have access to positive self-images. It is as yet unclear how individual differences in such “self-resources” can be measured. The reason why so little is known about this individual tendency can be traced back to the fact that little consensus exists about the underlying mechanism that makes self-affirmation effective. Although self-esteem is frequently mentioned as the underlying mechanism, a systematic review of self-affirmation emphasizes the inconsistent and fluctuating relationship between self-affirmation and self-esteem (McQueen & Klein, 2006). In unraveling the nature and existence of people’s potential cognitive self-affirmation inclination in the present studies, self-esteem is taken into account.

The aim in Chapter 4 is to construct a scale to measure people’s cognitive self-affirmation inclination. I propose that the essence of this inclination is the automatic retrieval and consideration of important self-images (e.g., Steele, Spencer, & Lynch, 1993). More concretely, it can be defined as the inclination to react with “pop-ups” of positive self-images in the face of self-threats. The automatic character of this tendency does not prevent people from having access to the outcome of the processes. This is in line with findings in the field of social comparison research; social comparison is also known for its automaticity, but in measuring this concept people can be asked some direct questions in order to infer their individual comparison tendencies (Gibbons & Buunk, 1999). Accordingly, I ask people to report their experienced relative frequency of “pop-ups” of positive self-images. Examples of questions in the measurement of cognitive self-affirmation inclination are: “I notice that I did some things very well” and “When I feel bad about myself, I think about all the things that I can be proud of.” People who indicate that they have these experiences frequently, are expected to react in line with this inclination when they are confronted with information comprising a (potential) self-threat.

**Part 3: Health Messages and Cancer**
The health outcomes mentioned in persuasive messages differ greatly. Some health campaigns concern mild diseases, like the flu. Others concern chronic diseases, like diabetes. However, a large number of
health campaigns refer to fatal outcomes. A disease that is frequently mentioned is cancer. Cancer is related to several lifestyle behaviors, such as tobacco smoking and alcohol consumption, and roughly half of the people who are diagnosed as having cancer will die from it (Brenner, 2002). Thus, there is a strong objective link between cancer and death. In Chapter 5 I focus on this specific health outcome.

A theory that is relevant when considering death is Terror Management Theory (based on the work of Ernest Becker, 1971, 1973). This theory is based on the premise that humans are in a precarious position owing to the conflict between biological motives to survive and the cognitive capacity to realize life will ultimately end. This generally unconscious awareness that death is inevitable, coupled with the proclivity for survival, has the potential to create paralyzing anxiety. Terror Management Theory suggests that people have defense mechanisms that prevent them from experiencing the anxiety that this awareness engenders.

Arndt et al. (2007) recently focused on the link between cancer and death. They showed that reminders of cancer instigated a fiercer suppression of death-related thoughts than did reminders of mortality. The construct of death is probably more abstract than the construct of cancer. The latter may more strongly activate the memory network relating to death, owing to the associations of cancer with the process of dying, suffering, and the ultimate farewell in the social context. The studies reported in Chapter 5 focus on the link between cancer and death-related thoughts. More specifically, I focus on the extent to which participants display suppressive tendencies when reminded of cancer. The aim is to show that perceptions of cancer are crucial to the way people handle death-related cognitions. Two types of associations are central: the treatability of cancer and the ability to prevent cancer. These associations are expected to influence the link between cancer and death, and consequently people’s suppressive reactions.

**Overview of the Empirical Chapters**
The general theoretical ideas pertaining to the three lines of research on self-threat in the domain of health communication are outlined above;
below is a summary of the structure and content of the empirical chapters.

*Health Messages and Involvement*  
Chapter 2 describes an examination of the extent to which type and level of involvement determine people’s responses to a health threat. In Study 2.1 value-involvement was manipulated, in Study 2.2 outcome-involvement was manipulated. Self-affirmation was manipulated in both studies to unravel the underlying defensive processes.

Chapter 3 reports on an experimental study with an immediate outcome assessment and a four-week follow-up. The main question is whether the elimination of an immediate defensive reaction towards a health message, owing to the addition of a self-affirmation procedure, can still be observed in participants’ behavior after four weeks. Thus, I investigate whether the open-mindedness caused by a self-affirmation procedure results not only in increased intentions but also in actual behavior. In order to generate defensiveness, value-involvement was included as individual difference measured at pretest. The health message concerned the negative consequences of insufficient fruit and vegetable intake. To show that defensiveness occurred, a self-affirmation procedure was used. After reading the health message participants immediately reported their intention to eat sufficient fruits and vegetables. One week and four weeks later, participants were asked to complete self-reports of fruit versus vegetable intake.

*Individual Differences in Self-Affirmation*  
Chapter 4 focuses on the question whether people can affirm themselves. In four studies I test a scale to measure people’s cognitive self-affirmation inclinations and to take the first steps in validating this scale. Study 4.1 was a cross-sectional study among smokers and was aimed at showing that cognitive self-affirmation inclination is related to perceptions of negative outcomes in a different way than self-esteem. In Study 4.2 I investigated the test-retest stability and the construct validity of cognitive self-affirmation inclination scale. In Study 4.3 the aim was to determine whether self-generated positive self-images
increase persuasion in the same way as self-affirmation manipulations do. In Study 4.4 I considered the combined effect of cognitive self-affirmation inclination and a self-affirmation manipulation. The aim of the design was to show whether a strong cognitive self-affirmation inclination satisfied participants’ need for positive self-images in the presence of a health threat; when people already have positive self-images available, a self-affirmation procedure should have no effect anymore.

Health Messages and Cancer
The studies reported in Chapter 5 focus on how people handle a confrontation with the threat of cancer. I look at the extent to which people have death-related thoughts when reminded of cancer. The number of death-related thoughts is considered to be a measure of the accessibility of the associative memory network for death. The main question here is whether people’s perceptions of cancer influence the number of death-related thoughts when they are reminded of cancer. In Study 5.1 the effects of cancer primes were compared with the effects of general death primes. In Studies 5.2 and 5.4 I looked at the influence of perceptions about the treatability of cancer. In Study 5.3 treatability was manipulated, and I explored perceptions of the preventability of cancer. In Study 5.1, self-affirmation was included as an individual difference (cognitive self-affirmation inclination); in Studies 5.2, 5.3, and 5.4, self-affirmation was manipulated. In addition, in Study 5.4 the effects of the perceptions pertaining to cancer were studied by applying a subliminal cancer prime.

Note that all the chapters are written in such a way that they can be read independently. As a consequence, there is some overlap between parts of the chapters. The empirical chapters in this doctoral thesis (Chapters 2-5) are based on collaborative research by me and others. Therefore, in those chapters, “we“ instead of “I“ is used when referring to the authors.