Chapter 1

General introduction
Many people engage in unhealthy behaviors, such as infrequent exercise, cigarette smoking, and drug use (Mokdad, Marks, Stroup, & Gerberding, 2004; Thacker et al., 2006). Health campaigns aim to decrease unhealthy behaviors and to improve public health, but these campaigns have shown varying degrees of success. Although some health campaigns have induced small improvements in terms of healthier attitudes, intentions, or behaviors (Noar, 2006; Snyder & Hamilton, 2002), others have shown no effects (Hornik, Jacobsohn, Orwin, Piesse, & Kalton, 2008) or even undesirable boomerang effects (Snyder & Blood, 1992). This dissertation argues that the varying effects of health campaigns can be better understood and, ultimately, potentially improved if interpersonal discussions on the topic of health campaigns are taken into account. After all, people do not only obtain information through mass media messages; they also acquire and transmit information through social interactions. Interpersonal communication about health topics has been shown to significantly affect health attitudes, intentions, and behaviors (e.g., Real & Rimal, 2007). Some evidence suggests that interpersonal communication can interact with the effects of health campaigns. That is, whether people talk about health topics can function as an outcome of health campaign exposure, a mediator of health campaign effects, or a moderator of health campaign effects (Southwell & Yzer, 2007). How negatively or positively people talk about health issues has also been shown to be an important predictor of desirable and undesirable health behaviors. However, this concept is relatively understudied.

The main objective of this dissertation is to further investigate how health campaigns, interpersonal communication, and the interplay between the two factors influence the determinants of health behaviors. This dissertation addresses four gaps in the literature by investigating whether health campaigns moderate the effects of health discussions and vice versa (Chapter 2), whether health campaigns influence how negatively or positively people discuss health topics and subsequent determinants of health behavior (Chapter 3), whether emotions induced by health campaigns affect how negatively or positively people talk about health topics and subsequent persuasion outcomes (Chapter 4), and whether the perception of how negatively or positively people themselves (versus conversation partners) talk about health issues is especially important for health determinants (Chapter 5). These questions are addressed in the context of alcohol consumption and binge drinking for two reasons. First, alcohol abuse and binge drinking, defined in the Netherlands as the consumption of four or more (for women) or six or more (for men) alcoholic beverages on one occasion, are particularly prevalent health problems related to many detrimental consequences (such as severe accidents and diseases; Li, Keyl, Smith, & Baker, 1997; Rehm et al., 2003). Second, despite the fact that people discuss the topic of alcohol consumption relatively frequently...
(Dorsey, Scherer, & Real, 1999), there is currently only marginal evidence on the influence of interpersonal communication regarding alcohol intake on the determinants of alcohol consumption and the effects of anti-alcohol campaigns. Therefore, it is especially important to examine the influence of interpersonal communication for this health issue.

**Health campaigns**

Every year, many health campaigns are launched across the globe to address a multitude of unhealthy behaviors, including alcohol abuse and binge drinking. Campaigns aim to generate specific effects by informing, educating, persuading, or motivating the target audience and are planned through communication activities that frequently involve mass media (Rice & Atkin, 2002; Rogers & Storey, 1987). Not all health messages are designed similarly. For instance, some health messages take a rational and informative approach and aim to inform their recipients. However, many health messages aim to persuade their audience by eliciting specific emotions in the target group (e.g., Dillard, Plotnick, Goldbold, Freimuth, & Edgar, 1996). For example, health campaigns may emphasize the negative consequences of unhealthy behaviors by using fear, disgust, or humor (e.g., Cohen, Shumate, & Gold, 2007). Given the costs of health promotion campaigns, considerable effort is devoted to assessing the effectiveness of health campaigns. The outcomes of such evaluations are frequently unsatisfying, demonstrating small, no, or boomerang effects.

Some studies have shown positive campaign effects (Noar, 2006), for example in the context of healthy eating (Dixon, Borland, Segan, Stafford, & Sindall, 1998), skin protection (Dobinson et al., 2008), smoking (Wheeler, 1988), physical activity (Reger-Nash et al., 2005), and drunk driving (Elder et al., 2004; Worden, Flynn, Merrill, Waller, & Haugh, 1989). However, the effects of successful health campaigns on health behaviors are often quite small (i.e., the mean effect sizes of health campaigns range from .04 to .15 depending on the topic; Snyder et al., 2004). In contrast, several studies describe health campaigns that did not elicit any changes in determinants of health behaviors, such as in the context of smoking (Fisher, 1995; Robinson & Killen, 1997), physical activity and high cholesterol levels (Luepker et al., 1994), and excessive alcohol consumption (Ringwalt, Ennet, & Holt, 1991). Another example of an ineffective health campaign is the National Youth Anti-Drug Media Campaign in the US (1998-2004). Although this campaign cost the US government approximately $1 billion, it was shown to be ineffective in terms of the social cognitive determinants of
marijuana use. In fact, the campaign was associated with an effect opposite to what was intended (i.e., a boomerang effect) by slightly increasing pro-marijuana cognitions (Hornik et al., 2008). Another example of such a boomerang effect was presented by Snyder and Blood (1992), who demonstrated that participants perceived more benefits of drinking alcohol after exposure to a message that included alcohol warnings.

Thus, health campaigns can result in relatively small, no, or boomerang effects. In this dissertation, it is argued that these varying health campaign effects can be better understood and, ultimately, potentially improved if interpersonal communication about the topic of the health campaign is considered. That is, it is possible that health campaigns that have been found to be ineffective elicited interpersonal discussions that were not in line with the health message. This idea was also stressed by Southwell and Yzer (2007), who noted that people may discuss the content of health campaigns in unintended ways. Alternatively, it is possible that certain health campaigns that were found to be successful elicited interpersonal talk that enhanced the effects of the health campaign. Consideration of the potential role of interpersonal communication within health campaign effects is in line with research emphasizing that, in addition to assessing health campaign effects at the individual level, it is important to realize that messages are received in an interpersonal context within social networks (Valente & Fosades, 2006).

**Interpersonal communication**

People do not only acquire information through mass media messages; they also obtain and transmit information through social interactions. Humans generally have a strong need to connect with others (Baumeister & Leary, 1995) and can do so via social exchanges, such as conversations. In fact, conversing is one of the most prominent activities in which people engage every day (Emanuel et al., 2008; Klemmer & Snyder, 1972). Although there is no consensus regarding the exact definition of interpersonal communication (Cappella, 1987; Roloff & Anastasiou, 2001), most researchers have noted that interpersonal communication refers to the exchange of messages between people (Burleson, 2010) and is influenced by human needs (e.g., Berger, 2002; Dillard, Anderson, & Knobloch, 2002; Southwell & Yzer, 2007). To shed light on the influence of interpersonal communication, this dissertation examines two different facets of interpersonal communication: conversational occurrence and conversational valence. These concepts have also been addressed by others, albeit with different wordings (e.g., Frank et al., 2012; Southwell & Yzer, 2007; Van den Putte, Monshouwer, De Bruijn, & Swart, 2010).
Conversational occurrence entails whether people talk about a particular topic. Conversational valence is defined as the favorability of conversations; that is, how negatively or positively people talk about a particular topic. Generally speaking, although conversational occurrence has received considerable attention in the literature, conversational valence has rarely been studied.

**Health campaigns and interpersonal communication**

**Conversational occurrence**

Whether people talk about health topics has been shown to influence health attitudes, intentions, and behaviors. For instance, in a study among college students, Dorsey and colleagues (1999) showed that conversations about binge drinking were related to excessive drinking. More recently, Real and Rimal (2007) showed that when college students discussed alcohol frequently, they also intended to drink more. Another example of the relationship between conversational occurrence and health determinants was presented by Kohler, Behrman, and Watkins (2007), who demonstrated that social interactions about HIV increased HIV risk perceptions.

Southwell and Yzer (2007) have argued that interpersonal discussions in the context of health campaign exposure can play three different roles. Conversational occurrence can be (1) an outcome of health campaign exposure, (2) a mediator of health campaign effects, or (3) a moderator of health campaign effects. First, several studies have shown that health campaigns can induce discussions about the health topic. For example, when evaluating the National Youth Anti-Drug Media Campaign, Hornik and Yanovitzky (2003) found that 48% of all youth had talked about the antidrug ads with others. This finding is in line with classical theories, such as the two-step flow theory and the diffusion of innovations theory (Katz, 1957; Lazarsfeld, Berelson, & Gaudet, 1944; Rogers, 1983), suggesting that mass media messages are spread through processes of interpersonal communication (i.e., secondary diffusion; Boulay, Storey, & Sood, 2002).

Second, discussions induced by mass media health campaigns can subsequently influence behavioral determinants, serving as a mediating variable within the relationship between health message exposure and health behaviors. For example, Van den Putte, Yzer, Southwell, De Bruijn, and Willemsen (2011) demonstrated that exposure to anti-smoking messages increased discussions about the health campaign and topic, and these conversations subsequently increased
smoking cessation intentions. Similarly, Hafstad and Aarø (1997) demonstrated that discussions triggered by anti-smoking campaigns elicited positive behavioral reactions toward smoking (see also Hwang, 2012; Schuster et al., 2006). In the context of HIV prevention, Geary et al. (2007) demonstrated that exposure to the Staying Alive campaign promoted discussions about HIV, which, in turn, positively influenced HIV prevention beliefs.

Third, Southwell and Yzer (2007) have argued that conversational occurrence can moderate health campaign effects. They suggested that health conversations can alter, undermine, or reinforce the effects of health campaigns (see also Hardy & Scheufele, 2005). Affirming this idea, Dunlop, Kashima, and Wakefield (2010) showed that campaign-stimulated discussions can moderate health campaign effects. In a study on the HPV vaccine among young women, these authors demonstrated that a particular HPV vaccination advertisement increased intentions to obtain the vaccine, an effect that was especially evident when the participants had talked about the ad with others. In alignment with this moderating influence of conversational occurrence on intentions, Southwell (2005) demonstrated that health campaign effects on other persuasion outcomes (e.g., message memory) can be moderated by conversations as well; that is, conversations about drug use amplified the effects of anti-drug advertisements on message memory.

Thus, some research in the context of vaccination behaviors and drug use has shown that conversational occurrence can moderate the effects of health campaigns. Interestingly, the other way around is also possible: health campaigns can also moderate the effects of conversational occurrence on health behaviors by influencing existing communication patterns. Because it has been argued that interpersonal communication more strongly influences health behaviors than health campaign exposure (e.g., Korhonen, Uutela, Korhonen, & Puska, 1998), it is relevant to consider the role of health campaigns within interpersonal communication effects in addition to the other way around. This possibility has not yet been explicitly tested. By examining both directions of interactions (health campaign exposure as a moderator of conversational occurrence effects and conversational occurrence as a moderator of health campaign effects) an integrative understanding of the interplay between conversational occurrence and health campaigns can be provided. This issue is addressed in Chapter 2.
Conversational valence

The majority of studies on the interplay between interpersonal communication and health campaigns have focused on conversational occurrence. As noted by Southwell and Yzer (2007), most research assumes that discussions elicited by health campaigns are supportive of the campaign's intentions. However, this is not always the case. David, Cappella, and Fishbein (2006) found that conversations can undermine health campaign goals. These authors demonstrated that participants who talked about anti-marijuana ads reported more pro-marijuana attitudes and subjective normative beliefs compared to participants who did not talk about the ads, presumably because the discussions were in favor of marijuana use or derogative of the anti-drug message. Consequently, it has been suggested that a more thorough focus on conversational content, in addition to conversational occurrence, is needed to more fully understand the role of interpersonal communication within health campaign effects (Southwell & Yzer, 2007).

In line with this notion, a few studies have examined how conversational valence affects health determinants. Dunlop et al. (2010) for instance showed that participants who spoke positively about the HPV vaccine had more positive attitudes toward the vaccine and had greater intentions to receive the vaccine. Van den Putte et al. (2010) found similar results in the context of cannabis use by demonstrating that negative conversations about cannabis use were related to more negative cannabis attitudes and intentions as well as a decrease in the actual use of cannabis. Conversely, positive conversations about cannabis were associated with attitudes, intentions, and behaviors in favor of cannabis use. Similar findings have been revealed in the context of condom use (Frank et al., 2012) and multivitamin use (Boster, Carpenter, Andrews, & Mongeau, 2012). In fact, it has even been suggested that conversational valence is more important than the mere frequency of interpersonal communication (Van den Putte et al., 2010).

Thus, some studies have shown that conversational valence can affect health determinants. Conversations that are positive about healthy behaviors or negative about unhealthy conduct result in healthier attitudes, intentions, and behaviors. However, no studies to date have explored whether health campaigns can influence conversational valence and subsequently affect health determinants (i.e., an indirect effect). In this dissertation, it is proposed that health campaigns, by frequently focusing on the negative consequences of unhealthy behaviors and thereby enhancing the accessibility of such negative associations (Higgins, 1996; Strack & Mussweiler, 1997), can induce a conversational valence that is negative.
about unhealthy conduct and can subsequently stimulate healthy behavioral determinants. This possibility is tested in Chapter 3.

Additionally, health campaigns can differ in the persuasive strategies they employ, such as the emotions that are targeted. Research has shown that message-induced emotions can influence conversational occurrence. For example, messages that evoke feelings of disgust, anxiety, or amusement have been shown to trigger discussions, whereas feelings of guilt, shame, or contentment decrease the occurrence of conversations (Berger, 2011; Brennan, Durkin, Wakefield, & Kashima, 2010; Peters, Kashima, & Clark, 2009). Hence, specific message-induced emotions vary in their ability to prompt interpersonal talk. However, whether specific emotions also influence the valence of such discussions is not yet known. Because conversational valence has been shown to be an important determinant of health behavior, it is perhaps even more important to investigate whether message-induced emotions influence conversational valence rather than focusing on whether such emotions predict conversational occurrence. This dissertation argues that emotions elicited by health messages can predict conversational valence. For instance, a health message that induces feelings of fear may evoke a more negative conversational valence by increasing the mental accessibility of concepts related to fear (Nabi, 2003) compared to a health message that focuses on the same negative consequences of unhealthy conduct using a humorous approach. This idea is tested in Chapter 4. Exploring the effects of health campaigns on conversational valence sheds light on the question of whether and, if so, which types of health messages influence conversational valence and subsequently affect determinants of health behaviors, thereby providing valuable information on how to improve public health.

**Self-perception of conversational valence**

Given the limited research on the predictors and consequences of conversational valence, the processes through which conversational valence affects health attitudes, intentions, and behaviors are unknown. In line with notions of self-perception, self-persuasion, counter-attitudinal advocacy, and the saying-is-believing effect, a potential mechanism through which conversational valence affects health determinants is that the perception of one's conversation behavior can induce attitudes in line with the expressed opinions. That is, it has been shown that when people verbalize a certain viewpoint in an interpersonal communication context, they subsequently adjust their private attitudes to become consistent with the opinion they expressed (Bem, 1965; Higgins, 1999; Janis & King, 1954;
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Pratkanis & Aronson, 2001; Strack, Martin, & Stepper, 1988; Wilson & Dunn, 2004). Expressing a viewpoint may result in a shift in attitudes (e.g., when the expressed viewpoint is counter-attitudinal) or in more extreme and stronger attitudes (e.g., when the expressed viewpoint is in line with existing attitudes; Downing, Judd, & Brauer, 1992; Powell & Fazio, 1984). For example, Janis and King (1954) demonstrated that when people gave a speech, they subsequently altered their attitudes to be in line with the given speech. Interestingly, this effect only occurred when people had given the speech themselves and not when they merely listened to the same speech given by others, illustrating a self-persuasion effect.

These self-perception and self-persuasion processes have not yet been explored in the context of health- or alcohol-related conversations. Although self-perception has been shown to be important for attitude change, it has not yet been determined whether the perception and the subjective experience of the valence of a health conversation (i.e., perceived conversational valence) is more influential than the objective valence of the conversation as viewed by independent observers (i.e., objective conversational valence). Furthermore, although self-persuasion has been demonstrated in a wide range of contexts, interpersonal communication research generally presumes that discussants are influenced by the persons to whom they speak (e.g., Katz & Lazarsfeld, 1955), not necessarily by what the discussants say themselves. Therefore, it is not yet clear whether people are affected differently by what they say themselves during health discussions as opposed to what their conversation partner says. Chapter 5 addresses these gaps in the literature.

To provide an overview of the aforementioned research findings regarding the effects of health campaigns and interpersonal communication on the determinants of health behaviors, a conceptual model is presented in Figure 1.1.

Context of this dissertation: Alcohol consumption and binge drinking

This dissertation is conducted in the context of alcohol abuse and binge drinking for two reasons. First, the topic of alcohol consumption is particularly prone to interpersonal discussion. Dorsey et al. (1999) showed that most college students speak at least once a week about alcohol or alcohol-related consequences with their peers, presumably because these young adults often consume alcohol in social contexts (Beck et al., 2008; Pavis, Cunningham-Burley, & Amos, 1997). The importance of social exchanges about alcohol consumption is also apparent from
Figure 1.1. Previous research concerning the effects of health campaigns and interpersonal communication on the determinants of health behaviors.
the vast amount of research demonstrating the importance of peer influence and social networks in the context of alcohol consumption (Bot, Engels, Knibbe, & Meeus, 2005; Goodwin, 1989; Maxwell, 2002; Urberg, Luo, Pilgrim, & Degirmencioglu, 2003). However, research is scarce on the influence of interpersonal communication about alcohol on alcohol consumption determinants and anti-alcohol campaign effects. Therefore, investigating the interaction between interpersonal communication and health campaigns is especially important in this health context.

Second, excessive alcohol consumption and binge drinking have been linked to many detrimental outcomes. Drinking excessive amounts of alcohol is associated with aggressive and abusive behaviors (Hughes, Anderson, Morleo, & Bellis, 2008), severe accidents, harassment, and fights (Li et al., 1997), impaired brain development (Crews, Braun, Hoplight, Switzer, & Knapp, 2000), multiple diseases (Rehm et al., 2003), future alcohol addiction (Grant & Dawson, 1997), and other substance abuse (Batel, Pessione, Maitre, & Rueff, 1995). Given these negative health effects, alcohol abuse is regarded as a major cause of preventable death and morbidity (Cherpitel, 2007). Furthermore, the high prevalence of alcohol abuse and binge drinking has been related to large societal costs. For instance, in the United States in 2006, the economic cost of alcohol abuse was estimated at $223.5 billion, of which $170.7 billion (76.4%) was attributed to binge drinking (Bouchery, Harwood, Sacks, Simon, & Brewer, 2011). Despite the multitude of negative effects related to alcohol abuse and binge drinking and frequent attempts to reduce alcohol consumption, many people engage in these behaviors. In particular, young adults, especially college students, binge drink relatively frequently (Kypri, Cronin, & Wright, 2005; O'Malley & Johnston, 2002; Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994; Wechsler et al., 2002). For instance, Hibell et al. (2009) showed that 43% of European students in 2007 engaged in binge drinking at least once a month (for similar findings, see Naimi et al., 2003; Van Rooij, Schoenmakers, & Van de Mheen, 2011). Given the detrimental consequences of binge drinking and the large costs to society as well as the fact that the topic of alcohol consumption is frequently discussed, an examination of the interplay between interpersonal communication and health campaigns is especially important for this health issue.

**Dissertation goals and outline**

The main aim of this dissertation is to investigate how health campaigns, interpersonal communication, and the interaction between these two factors
influence the determinants of health behaviors in the context of binge drinking. The conceptual model in Figure 1.2 shows the relationships between health campaigns, interpersonal communication, and determinants of health behaviors that are investigated in the chapters of this dissertation. Chapter 2 focuses on conversational occurrence about alcohol, and Chapters 3-5 investigate conversational valence about alcohol.

Chapter 2

The first objective of this dissertation is to shed light on the interaction between health campaigns and conversational occurrence by investigating whether conversational occurrence moderates the effects of health messages and whether health message exposure moderates the effects of conversational occurrence. Chapter 2 addresses this aim through a 2 (anti-alcohol message or no alcohol message) x 2 (alcohol conversation or control conversation) experiment, before and after which binge drinking intentions were assessed. This study investigates how changes in binge drinking intentions are affected by the interplay between health campaign exposure and conversational occurrence.

Chapter 3

The second objective of this dissertation is to investigate whether exposure to an anti-alcohol message predicts conversational valence and whether this valence, in turn, influences binge drinking intentions. Chapter 3 addresses this aim through a two-wave experiment in which participants were assigned to one of two conditions (anti-alcohol message versus no alcohol message exposure), after which all participants engaged in a conversation about alcohol and binge drinking followed by an assessment of conversational valence and binge drinking intentions. This study examines whether health campaign exposure influences conversational valence and whether conversational valence subsequently induces changes in binge drinking intentions (i.e., an indirect effect).

Chapter 4

The third objective of this dissertation is to investigate whether emotions induced by emotional anti-alcohol appeals influence conversational valence about alcohol and, ultimately, binge drinking attitudes, subjective norms, perceived
Figure 1.2. Conceptual model showing the relationships that are addressed in the chapters of this dissertation.
behavioral control, intentions, and behaviors. The fourth chapter of this dissertation addresses this aim through a pretest-posttest experiment, in which participants viewed an anti-alcohol (informational, fear, disgust, or humor) appeal and then engaged in a conversation about alcohol and binge drinking. Next, emotions, conversational valence, and binge drinking determinants were assessed. This study examines whether emotions induced by exposure to a health message influence conversational valence about alcohol and subsequent persuasion outcomes.

Chapter 5

The fourth objective of this dissertation is to investigate whether perceived and objective conversational valence differ in their ability to influence binge drinking determinants and whether the effects of conversational valence are influenced by the distinction between the self and the conversation partner. Chapter 5 addresses this aim by asking participants to discuss the topic of alcohol and binge drinking, after which perceived conversational valence, objective conversational valence, and binge drinking attitudes and intentions were measured separately for the two persons within a conversation dyad. This study investigates whether perceived or objective conversational valence better predict binge drinking attitude and intention change and whether the contribution of the participants themselves versus the contribution of the conversation partner is more influential for discussion effects.

Chapter 6 - General discussion

As stated earlier, the overall aim of this dissertation is to shed light on how health campaigns, interpersonal communication, and the interplay between the two factors influence the determinants of health behaviors. The sixth chapter of this dissertation addresses this aim by providing an overview of the main findings, theoretical and practical implications, and future research suggestions.