Let's talk about alcohol: The role of interpersonal communication and health campaigns
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Chapter 2

Predicting health:
The interplay between interpersonal communication and health campaigns

This chapter is accepted for publication as:
Chapter 2

Abstract

The present study experimentally investigated the interplay between interpersonal communication and health message exposure in relation to alcohol consumption intentions. One hundred and seventy-four students participated in a study on the effects of an anti-alcohol message. At baseline, the intention to refrain from binge drinking was assessed, while at the second wave (two weeks later) participants were assigned to the conditions of a 2 (anti-alcohol message versus no alcohol message) x 2 (alcohol conversation versus control conversation) between-subjects design, after which intention was again assessed. Results showed that when participants talked about alcohol (instead of the control topic) and were not exposed to an anti-alcohol message they were less inclined to refrain from binge drinking, an effect that was not visible when participants talked about alcohol after viewing an anti-alcohol message. These findings suggest that health campaign exposure moderates the influence of interpersonal communication on health variables.
Stimulating public health and discouraging unhealthy conduct is beneficial for the wellbeing of individuals as well as societies. Health behaviors can be influenced by a multitude of factors. For one, health campaigns are often used to stimulate healthy conduct. Furthermore, conversations about health can influence health attitudes, intentions, and behaviors. The studies that have investigated how the interplay between health messages and interpersonal communication affects health variables have mainly focused on the mediating or moderating role of interpersonal communication within health campaign effects. We argue however, that interpersonal communication regarding health topics can also occur without health message exposure, a notion largely ignored by previous studies. Therefore we propose an additional possibility: health campaigns may moderate the effects of interpersonal communication on health variables. These two potentially moderating roles (interpersonal communication as moderator of campaign effects and health campaign exposure as moderator of conversation effects) will be investigated in the current study by the use of an experiment.

Health campaigns and interpersonal communication as correlates of health behaviors

Health campaigns are frequently used to raise awareness, inform about, and stimulate healthy behaviors. However, mixed effects of health campaigns have been reported, varying from detrimental boomerang effects (e.g., Snyder & Blood, 1992), to no effects (e.g., Hornik et al., 2008), to relatively small positive effects (Noar, 2006; Snyder & Hamilton, 2002) on health attitudes, intentions, and behaviors (from now on referred to as health variables). These modest and inconsistent effects of health campaigns may point to the existence of moderating factors (i.e., variables that influence the impact of health campaign exposure on health variables). A potentially important moderating variable is interpersonal communication, given the fact that people may discuss the content of the health message after being exposed to a health campaign. Such conversations may influence the effectiveness of health campaigns.

In fact, interpersonal communication has frequently been directly linked to health intentions and behaviors (e.g., Noar, Carlyle, & Cole, 2006). For instance, Real and Rimal (2007) demonstrated that discussions about alcohol increased alcohol consumption intentions and behaviors. Several mechanisms have been proposed through which interpersonal communication influences these health variables, for instance by providing information regarding the social appropriateness of the health behavior (Lapinski & Rimal, 2005) or by improving
the processing and learning of health information due to the interactive nature of conversations (Eveland & Thomson, 2006; Kohler et al., 2007; Southwell, 2005). Thus, conversations about health topics are important to consider when studying health attitudes, intentions, and conduct.

**Conversational occurrence as a mediator and moderator for health campaign effects**

Considering the relevance of both health campaigns and interpersonal communication for health variables, as well as the potential moderating role of interpersonal communication within health campaign effects, it seems worthwhile to examine how the interplay between interpersonal communication and health message exposure affects health outcomes. Recently, some studies have started to examine this relationship. Most of these studies do so from the perspective of the effectiveness of health campaigns, by examining the mediating or moderating role of interpersonal communication within health message effects.

**Previous studies on mediation.** The notion that the occurrence of interpersonal communication (whether people speak about a specific topic; from now on referred to as *conversational occurrence*) is important for the effects of mass mediated messages has been confirmed by decades of research focusing on a mediating role of interpersonal communication. Within this context, a mediational pathway entails that health campaigns influence the occurrence of health conversations which subsequently influences health variables. This notion reflects the tenets of the two-step flow theory which posits that messages “flow” from mass media to individuals who, in turn, spread the message further through the process of interpersonal communication (Katz, 1957; Lazarsfeld et al., 1944). Some studies have also confirmed this mediating role of conversational occurrence within the context of health campaigns (e.g., Geary et al., 2007; Hornik, 2006; Schuster et al., 2006). For instance, a recent study on smoking cessation showed that anti-smoking mass mediated messages elicited discussions about the campaign and topic which, in turn, increased the intention to quit smoking (Van den Putte et al., 2011).

**Previous studies on moderation.** Although relatively many studies have investigated the mediating role of conversational occurrence within the relationship between health message exposure and health variables, only a few studies have examined a moderating role. Within this context, a moderating relationship implies that health conversations influence the effects of health campaigns on health
variables. Hardy and Scheufele (2005) and Southwell and Yzer (2007) for instance suggest that conversations may alter, undermine, or reinforce the effects of mass mediated (health) messages. However, the few studies that have investigated this moderating role have often employed correlational survey designs, which face significant problems when making causal attributions (e.g., does talking about a health topic actually moderate health campaign effects on health intentions, or are those who intend to change their behavior just more inclined to talk about the health topic), making it difficult to ascertain potential moderation effects (see also Weinstein, 2007). To our knowledge, the only experimental study that tested moderation of conversational occurrence was conducted by Dunlop et al. (2010), showing that conversational occurrence indeed moderated the effects of health messages on health variables. In specific, they demonstrated that a particular health message had a positive influence on healthy intentions, an effect that was especially apparent when participants had discussed the health ad. Unfortunately, this study compared two different types of health messages, whereas a proper investigation of a moderating role of conversational occurrence entails a comparison of a health message versus no health message group. That is, whether a conversation alters the effect of a health message should be examined by investigating whether the main effect of the message (i.e., the comparison between message exposure versus no message exposure) differs between a conversation group and a no-conversation group. Thus, even though these above-mentioned findings point to the relevance of interpersonal communication as a moderating variable, limitations in these studies make it difficult to delineate the exact causal role that interpersonal discussions play. The present study intends to further investigate the moderating role of conversational occurrence by employing a two-wave experimental design to adequately assess causality and by comparing a health message condition with a no health message condition. Based on the above-mentioned, we hypothesize:

H1a. Conversational occurrence moderates the influence of health message exposure on health intentions.

Health campaign exposure as a moderator for the effects of conversational occurrence

So far, studies on the interplay between interpersonal communication and health messages have mainly examined the effects of campaign-induced conversations (i.e., conversations that occur after health campaign exposure).
However, it is unlikely that, prior to health message exposure, people have been completely silent about the topic addressed. In fact, people may discuss health topics, regardless of (recent) exposure to a health message. Thus, it is possible that health campaign exposure affects already existing communication patterns, instead of solely triggering conversations. Exposure to a health message may affect the valence and content of the discussion (e.g., by emphasizing the negative consequences of unhealthy conduct) and may consequently moderate the effect of the conversation on health variables. Currently employed research designs have been unable to explore this potentially moderating influence of health campaigns. In the present experiment we include a conversation group not exposed to a health message to investigate health message exposure as possible moderator. Based on the aforementioned, we hypothesize:

H1b. Health message exposure moderates the effects of conversational occurrence on health intentions.

The present study

The main purpose of the present study is to provide an integrative understanding of the interplay between health messages and interpersonal communication in relation to relevant health variables. By employing a two-wave experimental design, consequently enabling us to infer causality with more certainty than previous studies, we investigate whether conversational occurrence moderates health message effects and whether health message exposure moderates the effects of conversational occurrence. We focus on an anti-alcohol message aimed at young adults because alcohol abuse and binge drinking - defined as the consumption of four or more (for women) or six or more (for men) alcoholic beverages on one occasion - is a very pervasive problem in society, especially for adolescents and young adults, and is related to many negative outcomes (e.g., Batel et al., 1995; Grant & Dawson, 1997; Naimi et al., 2003). By using an anti-alcohol message and by focusing on young adults, more insight can be gained into how young people can be stimulated to refrain from binge drinking. Furthermore, considering interpersonal communication for alcohol-related behaviors may be of special importance, as young adults frequently consume alcohol in social contexts (Beck et al., 2008; Pavis et al., 1997). Therefore, the chance that young people discuss alcohol consumption or alcohol-related messages may be greater than for other health behaviors and messages. The main dependent variable in this study is the intention to refrain from binge drinking.
Method

Pilot study

To select a suitable anti-alcohol message for the main study, we conducted a pilot study. During the pilot study ($N = 40$), participants evaluated several anti-alcohol messages on measures of perceived effectiveness (e.g., “I thought this video was effective” and “I thought this video was convincing”; Dillard, Shen, & Vail, 2007; Fishbein, Hall-Jamieson, Zimmer, von Haeften, & Nabi, 2002). Hereafter, the pairs of participants in the pilot study were requested to wait five minutes together before they were given the next task, and therefore they had the opportunity to chat with each other (possibly about the anti-alcohol messages or the alcohol topic but not necessarily). No other people were present, but the conversations were recorded. Participants were unaware that our real interest was in what they discussed in these five minutes. The chosen anti-alcohol message was discussed frequently, as compared to the other messages. This was an important requirement for selection because participants in the main study needed to be able and feel comfortable to discuss the anti-alcohol message and alcohol topic. Furthermore, the selected message was perceived as the most effective video. The specific message was part of the national “Know Your Limits” binge drinking campaign in the UK (2009 - 2010). The video depicts a young girl who, just before going out, rips her dress, smears her make-up, and vomits in her hair. After this, she seems to consider herself ready to go out and walks out the door. The message contains no spoken words, but ends with the written message “You wouldn’t start a night out like this, so why end it that way?”

Main study

Participants and design. One hundred and seventy-four participants took part in a two-wave study. Ten participants were excluded from analysis because they had either already participated in the pilot study or because they indicated to never consume any alcohol. One hundred and sixty-four participants, 125 women and 39 men, were included in the analysis ($M_{age} = 22.60, SD_{age} = 1.64$). All participants were undergraduate students of the University of Amsterdam who were enrolled in an obligatory course and who received credits for their cooperation. Participants registered in pairs and were randomly allocated to the cells of a 2 (anti-alcohol message exposure versus no alcohol message exposure)
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x 2 (conversation about alcohol versus conversation about control topic) between-subjects design.

Materials and procedure. Questionnaire T = 0. Two weeks before the experiment took place in the lab, participants were asked to fill out an online questionnaire that was distributed via email (T0). The definition of binge drinking was provided at the beginning of the questionnaire. The intention to refrain from binge drinking was assessed by three statements (“I intend to not binge drink during the next two weeks”, “I plan to not binge drink during the next two weeks”, and “I will try to not binge drink during the next two weeks”) which could be answered on seven-point scales (1 = Very unlikely to 7 = Very likely). The scores on these three items were averaged, so that this mean score would reflect a general measure of the intention to refrain from binge drinking ($M_{T0} = 3.65$, $SD_{T0} = 1.97$, $\alpha_{T0} = .97$; $M_{T1} = 3.60$, $SD_{T1} = 1.96$, $\alpha_{T1} = .98$). After finishing the first questionnaire, participants were informed that they would be expected at the research lab two weeks later, to take part in the lab experiment.

Message exposure. Once arrived at the research lab, each participant was led to a cubicle where a PC was placed. They individually watched five short unrelated videos, resembling a commercial break, on the computer screen: respectively an iPod commercial, a control video, a chewing gum commercial, a DIY-store commercial, and a telephone company commercial. The control video was a public service announcement that focused on the potential harmful consequences of publishing personal information on the Internet. Additionally, half of the participants were exposed to a health message about the negative effects of binge drinking, based on the pilot study, which was placed as the fourth message (i.e., before the DIY-store commercial). These participants represented the anti-alcohol message condition. The participants who did not view an anti-alcohol message represented the no alcohol message condition.

Interpersonal communication. After individually watching the videos, the two participants were led to a different room where couches were placed. Here, they were asked to discuss a topic with each other. Half of all participants were instructed to discuss the topic of “alcohol and binge drinking” (i.e., the alcohol conversation condition). The other half of the participants were instructed to talk about the topic of the control video: “publishing personal information on the Internet” (i.e., the control conversation condition). In this manner the two conversation groups only differed in the content of their discussion. Participants
were monitored during the conversation to ensure that they stayed on topic. In some exceptional cases, the experimenter re-entered the room to guide the participants back on topic.

Questionnaire $T = 1$. After five minutes of discussion, the participants were separately led back to their cubicles where they were requested to fill out a questionnaire (T1). In this survey the intention to refrain from binge drinking was again assessed.

Data analysis

To investigate the overall interaction effect between conversational occurrence and health message exposure on the intention to refrain from binge drinking, a 2 (control conversation versus alcohol conversation) x 2 (no alcohol message versus anti-alcohol message exposure) repeated measures ANOVA was conducted with intention (at T0 and T1) as dependent variable.

H1a. To separate the effects of conversational occurrence and message exposure, different subsamples were examined. To examine whether conversational occurrence moderated the influence of message exposure on intention, the effect of message exposure on intention was examined separately for the two conversation conditions. When the influence of message condition (no alcohol message versus anti-alcohol message) on intention differed between the two conversation groups, a moderating role of conversational occurrence would be revealed.

H1b. We investigated the potentially moderating role of message exposure in the same manner. That is, the effect of conversational occurrence was examined separately for the two message conditions. When the influence of conversation condition (control conversation versus alcohol conversation) on intention differed between the two message groups, a moderating role of message exposure would be revealed.
Results

A 2 (control conversation versus alcohol conversation) x 2 (no alcohol message versus anti-alcohol message exposure) repeated measures ANOVA with intention (at T0 and T1) as dependent variable revealed a borderline significant interaction effect of conversational occurrence x message exposure on intention, $F(1, 160) = 2.88, p = .092$, eta$^2 = .02$. The main effects of message exposure, $F(1, 160) = 0.02, p = .882$, eta$^2 = .00$, and conversational occurrence, $F(1, 160) = 1.59, p = .209$, eta$^2 = .01$, were insignificant. Figure 2.1 shows the (change in) intention for each condition.

![Figure 2.1. The change in the intention to refrain from binge drinking across the four conditions.](image)

**Note.** The exact mean scores and standard deviations were: No ad - Ctrl conv, $M_{\text{Int T0}} = 3.47, SD_{\text{Int T0}} = 1.80, M_{\text{Int T1}} = 3.78, SD_{\text{Int T1}} = 1.90$; No ad - Alc conv, $M_{\text{Int T0}} = 3.65, SD_{\text{Int T0}} = 2.04, M_{\text{Int T1}} = 3.19, SD_{\text{Int T1}} = 1.88$; Alc ad - Ctrl conv, $M_{\text{Int T0}} = 3.74, SD_{\text{Int T0}} = 2.06, M_{\text{Int T1}} = 3.65, SD_{\text{Int T1}} = 2.00$; Alc ad - Alc conv, $M_{\text{Int T0}} = 3.74, SD_{\text{Int T0}} = 2.02, M_{\text{Int T1}} = 3.76, SD_{\text{Int T1}} = 2.04$. 
H1a. When participants spoke about the alcohol topic, the intention to refrain from binge drinking did not differ significantly between the anti-alcohol message and the no alcohol message condition, $F(1, 82) = 1.47, p = .228$, eta² = .02. When participants spoke about the control topic this pattern was the same: the intention to refrain from binge drinking did not differ significantly between the anti-alcohol message and the no alcohol message condition, $F(1, 78) = 1.45, p = .232$, eta² = .02. Thereby, the results indicate that conversational occurrence was not a moderator of the effect of health message exposure on intention because the influence of message exposure did not depend on the conversational occurrence condition (thereby not supporting H1a).

H1b. However, the results do suggest that health message exposure moderated the effect of conversational occurrence on intention. That is, the influence of conversational occurrence on intention depended on the message condition (thereby supporting H1b). When participants were exposed to the anti-alcohol message, the intention to refrain from binge drinking did not differ significantly between the alcohol conversation and the control conversation condition, $F(1, 81) = 0.08, p = .772$, eta² = .01. However, when participants were not exposed to the anti-alcohol message, the intention to refrain from binge drinking significantly decreased after talking about alcohol as compared to talking about the control topic, $F(1, 79) = 5.05, p = .027$, eta² = .06. Thus, a negative effect of conversational occurrence about alcohol on the intention to refrain from binge drinking was found, though only in the no alcohol message condition.

To further elucidate the findings, the difference scores between intention T0 and intention T1 are illustrated in Figure 2.2. Interestingly, whereas the greatest increase in the intention to refrain from binge drinking occurred among the participants who were not exposed to an anti-alcohol ad and did not talk about alcohol, the biggest decrease in the intention to refrain from binge drinking occurred among the participants who were not exposed to an anti-alcohol ad but did discuss the alcohol topic. Thus, when not exposed to the anti-alcohol ad, participants' intention to refrain from binge drinking decreased substantially when they talked about alcohol as compared to when they did not. This negative effect of talking about alcohol disappeared when participants first viewed an anti-alcohol message. That is, when participants were exposed to the anti-alcohol ad, it hardly mattered whether they discussed the topic of alcohol or not.
Figure 2.2. The difference scores between the intention to refrain from binge drinking at T0 and the intention to refrain from binge drinking at T1.

Note. The two ad conditions are depicted on the X-axis and the two conversation conditions are illustrated as two different slopes.

Discussion

The purpose of the present study was to provide an integrative understanding of the interplay between health message exposure and interpersonal communication in relation to health variables. Specifically, we aimed to test whether conversational occurrence functioned as a moderator for the effects of health message exposure on health intentions (H1a) and whether health message exposure moderated the effects of conversational occurrence on health intentions (H1b). The results supported hypothesis H1b but did not support H1a.

The finding that health message exposure and conversational occurrence (borderline) significantly interacted in influencing the intention to refrain from binge drinking is in agreement with previous studies that stress the relevance of the interplay between both factors for health variables (e.g., Geary et al., 2007; Southwell & Yzer, 2007; Van den Putte et al., 2011). However, our subsequent
analyses revealed that, in contrast with previous studies (e.g., Dunlop et al., 2010; Hardy & Scheufele, 2005; Southwell, 2005), there is no evidence of a moderating role of conversational occurrence within health campaigns effects. The effects of health message exposure did not differ between the two conversation conditions. A first explanation could be that, because interaction analyses require substantial statistical power, the power was too low to detect a significant change in intention between the ad conditions as a function of the conversation.

Secondly, the discrepancy with previous studies could be due to differences in study designs. For instance, whereas previous studies have mostly used survey-based designs, we used a (two-wave) lab experiment to adequately assess moderation effects. Doing this, we aimed to enhance our causal understanding of the interplay between health message exposure and interpersonal communication; however, it may have been more difficult to find effects in such a restricted laboratory setting (i.e., a situation where interpersonal communication was operationalized by the mere manipulation of the occurrence of a five-minute conversation). On the other hand, it might be possible that in survey-based designs respondents report only those conversations that make the strongest impression, whereas an unknown percentage of alcohol-related conversations is forgotten and thus not reported. It is possible that such methodological differences account for the discrepancy with previous studies. More research is needed to investigate these null findings so that more light can be shed on the moderating roles of conversational occurrence and health messages. For instance, under what circumstances do conversations, messages, or the interaction between both factors, fail or succeed to influence health variables?

Whereas we found no evidence of a moderating influence of conversational occurrence on health campaign effects, we did find support for such a moderating role of health message exposure. That is, the results suggested that the effects of conversational occurrence depended on the message condition. When a conversation about alcohol was stimulated within the no alcohol message condition, participants’ intention to refrain from binge drinking significantly decreased as compared to when the alcohol topic was not discussed. This negative effect of conversing about alcohol was not visible in the anti-alcohol message condition. Thus, by including a control group without health message exposure, we illuminated the effects of conversations that occur without stimulation of a health message. In sum, we shed a different light on the interplay between health campaigns and interpersonal communication in comparison to previous studies: exposure to a health message influences the effects of conversational occurrence on health variables and not necessarily the other way around.
One might wonder why exposure to a health message shortly before a conversation would moderate the influence of conversational occurrence on health variables. As a potential explanation, we argue that exposure to a health message may influence how negatively or positively people speak about the health topic (i.e., the conversational valence). When people converse shortly after health message exposure, the (valence of the) health message is still relatively active in working memory (e.g., Fazio, 1995; Higgins, 1996) and may consequently influence the valence of the conversation (for more information on such “anchoring” effects, see Strack & Mussweiler, 1997; Tversky & Kahneman, 1974). Given the fact that several studies demonstrated the relevance of conversational valence for health attitudes, intentions, and behaviors (Dunlop et al., 2010; Van den Putte et al., 2010; Walther, DeAndrea, Kim, & Anthony, 2010), it is possible that a health message, by influencing the valence of the discussion, subsequently influences health variables. This notion is worth testing in future studies.

Notably, the results suggest a negative (i.e., unhealthy) effect of conversational occurrence when no health message was seen beforehand. Given the fact that unhealthy behaviors often have both pleasant and unpleasant consequences, conversations about such behaviors can address both sides. Conversations about alcohol without exposure to a (negative) anti-alcohol message may be relatively more focused on the positive aspects and consequences of the unhealthy behavior, causing a decrease in healthy intentions. In this case, one needs to be careful about stimulating conversations about the topic. However, discussions about a health topic may not always have a negative influence. People might discuss other health topics (e.g., using a condom) in a more positive (healthy) manner, subsequently increasing healthy intentions and behaviors. More research is needed to investigate this idea.

Limitations and conclusions

Although the findings of this study suggest that health message exposure influences the effects of conversational occurrence, several limitations must be considered. First, we first manipulated health message exposure and then manipulated conversational occurrence. One might argue that this design allows for a test of conversational occurrence as a moderator, but the specific order of manipulations does not allow for a moderation test of health message exposure (i.e., because the health message is shown before the conversation). A relevant new finding of our study is that the effect of a health conversation depends on health message exposure, thereby indicating that message exposure can be considered a
moderator. However, a possibly even more suitable method to disentangle the two moderating roles would be to manipulate both factors in two different orders in time. Future research should examine the order effects of alcohol message exposure and alcohol conversations to further clarify the specific roles that health campaigns and conversations play in determining health variables.

Second, we focused on one specific health behavior (alcohol consumption) and one specific (anti-alcohol) message. Thus, extrapolating our results to health behaviors and health campaigns in general must be done cautiously. Whether the same effects would be encountered with a different health message or with a different health behavior is not yet evident. Smoking cessation for instance, may be even more dependent on habits and addiction, and this health behavior could be more difficult to influence through (a combination of) health conversations and health messages. Further study should extend our findings to other messages and other health behaviors.

Third, for the purpose of this article we only examined the occurrence of the conversation; however, we did not examine the influence of conversational content. As mentioned earlier, one relevant aspect may be conversational valence (e.g., Dunlop et al., 2010). Furthermore, when people speak about their personal experiences with regard to health behaviors (such as discussing the number of beers one consumed during the last weekend), such conversations may have more impact than when people merely discuss fact-related information (Hardin & Higgins, 1996). In addition, emotional sharing during conversations may increase the impact of the discussion (Mendolia & Kleck, 1993; Rimé, Mesquita, Philippot, & Boca, 1991). Moreover, in a dyadic conversation, one of the two may dominate the conversation. Whether and how this relates to a change in determinants of health behavior is not yet known. Future research should investigate the role of conversational content in more detail. Lastly, we did not investigate how specific message features relate to interpersonal communication and subsequent health variables. Future studies that manipulate message content could provide useful insights into successful health promotion attempts.

Caveats aside, the current research provides some valuable insights. A significant impact of conversational occurrence was revealed in the no alcohol message condition but not in the anti-alcohol message condition. Talking about alcohol negatively influenced the intention to refrain from binge drinking; an effect that was not visible after exposure to an anti-alcohol ad. Thereby, we suggest that the negative effect of interpersonal communication on health variables can be countered by health campaign exposure.