

Threat appeals in public service announcements: Effects of message framing and relationship norms

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Abstract: Threat appeals have been widely utilized in numerous types of public service announcements (PSAs), and previous research has focused on the impact of the inherent messages in these announcements. By examining the research on the effects of framing PSAs in terms of the threat of the message to oneself or others, we proposed a clear conceptualization of “threat-target framing.” The first two studies addressed the direct effects of threat-target framing and found that other-oriented threat appeals can evoke more guilt than can self-oriented threat appeals. Moreover, self-oriented threat appeals can evoke more fear and immediately direct recipients’ attention to the smoker than can other-oriented threat appeals. Study 3 reported that a contextual factor—relationship norms—was introduced as a potential moderating factor. Results showed that relationship norms had the potential to moderate the effect of threat-target framing on recipients’ fear response, but not the effect on recipients’ guilt and coping response. In sum, the results highlighted the importance of message framing of advertising copies and the placement context. Our findings may be useful in understanding the antecedents of the persuasiveness of PSAs.

Keywords: emotion; eye-tracking; message framing; relationship norms; threat appeals

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Threat appeals, which describe a negative consequence that may happen to a recipient if he or she does or does not engage in a particular behavior (Witte, 1992), are commonly used as a persuasion technique in public service announcements (PSAs) (Morales, Wu, & Fitzsimons, 2012). The effects of message framing on the persuasiveness of threat appeals have long been of interest to researchers and practitioners in the field of communications (Shen, 2010). Message framing is a major theme or central organizing concept in advertising (Pan & Kosicki, 2005). Specific aspects of reality are highlighted in a specific message frame, thus becoming salient or accessible to recipients (Shen, 2010). Given its complexity, message framing in advertising can be analyzed through various dimensions. The most common dichotomy is gain-versus-loss-framed appeals ads (Bartels, Kelly, & Rothman, 2010) or positively versus negatively framed ads (Chang & Lee, 2010).

Message themes of antismoking ads include several categories, such as health consequences, social norms and imagery, secondhand smoke, and industry manipulation (Farrelly, Niederdeppe, & Yarsevich, 2003). The effect of almost every theme has been studied extensively and separately; however, little attention has been paid to the effect comparison among several themes. Generally, an actor engaging in risky behavior not only endangers him- or herself but also other people around him or her (Kelly & Hornik, 2016), as is the case with victims of secondhand smoke. Correspondingly, antismoking messages can be framed to focus on either the self or others. The theme of health consequences emphasizes the frightening health or social repercussions of smoking to the smoker (Pechmann, Zhao, Goldberg, & Reibling, 2003), which we will refer to as “self-oriented threat” appeal PSAs. By contrast, other PSAs may emphasize the serious harm of smoking to other

people (Farrelly et al., 2003), which we will call “other-oriented threat” appeal PSAs. The purpose of our study is to address the effects of threat-target framing, which is how different threatening messages can affect the recipients’ emotions, perceptual patterns, and coping behaviors.

Theoretical background

Threat-target framing

A handful of studies have focused on the effects of framing PSAs in terms of threat or benefits to self or others. By using content analysis, Prematunge et al. (2014) found that a considerable number of influenza vaccination campaigns that took either the other-oriented or personal benefit frame were effective. Using an experimental design, Kelly and Hornik (2016) found that an other-oriented benefit frame increased people’s intention to receive the vaccine more than did the self-oriented frame; the “other” could refer to a close other (child or loved one) or unknown others. This finding seemed to be true for the threat frame as well. Lipkus, Ranby, Lewis, and Toll (2013) found that couple-focused antismoking PSAs produced a stronger desire to quit smoking, as compared to individual-focused PSAs. Although these studies have provided an insight into the relationship between target framing and intention responses, exploring the relationship between target framing and emotional responses may provide yet another facet of attitude change (Dillard & Peck, 2001).

Until now, little attention has been paid to examine the relationship between target framing and emotional responses, as the findings have been suggestive rather than conclusive. Shen (2010) used a quasi-experimental design to explore how health consequences and secondhand smoke frames (analogous to self-oriented and other-oriented threat appeals, respectively) influenced the recipients’ discrete emotions. He showed the participants, most of whom were Caucasians, four scenarios that depicted either the horrible consequences of smoking for the smoker or for the person who inhaled secondhand smoke. After watching each scenario, participants were asked to provide an affective response such as fear and guilt. Regarding their fear response, the results showed that self- and other-oriented threat frames led to the same amount of fear. Block (2005) found that the effect of self- and other-oriented threat frames on emotional responses was moderated by the participants’ self-construal. Other-oriented threat appeal

elicited more fear among participants with independent self-construal than with self-oriented threat appeal. By contrast, the same amount of fear was elicited among participants with an interdependent self-construal, which could be explained by the blurred line between the self and others, as Block argued. In this study, participants were all Chinese who were considered interdependent (e.g., Markus & Kitayama, 1991; Singelis, 1994). Simply put, participants in Chinese culture would be likely to treat others as themselves. As such, following Block, we propose the following hypothesis:

Hypothesis 1a: The participants perceive the same amount of fear, regardless of whether the PSA was self- or other-oriented threat framing.

Regarding guilt response, the result of Shen’s work (2010) showed that self-oriented threat frames led to more guilt than did other-oriented threat frames. This result seemed a little strange because people usually felt guilty when they harmed others (Passyn & Sujun, 2006), especially when one believed that he or she was responsible for the harm (Kubany & Watson, 2003). After scrutinizing the materials that Shen used, we found that all the stories were narrated from a third-person perspective and were not relevant to the recipients. This design might have two problems. First, it could have made the involvement of recipients in the perspective of the PSAs difficult. Self-referenced manipulations (Block, 2005) were necessary to ensure that participants were sufficiently motivated to process the message. Second, when the recipients did not believe that they were responsible for the harm to others, they would not feel guilty. By using new materials that depict the recipient’s behavior as a threat to his or her or others’ health from a first-person perspective, the current study aims to test the following hypothesis (Studies 1 and 2):

Hypothesis 1b: The participants perceive more guilt when the PSAs are self-oriented compared with other-oriented threat framing.

The recipients’ basic perceptual processing pattern could provide another facet for examining the effectiveness of threat appeals, except for emotional response. Shen (2010) analyzed the process of the framing effect and contended that the activation of certain knowledge structures was a

necessary step between message exposure and its impact. He found that the message frames led to corresponding cognitive responses, in which the consequence (self-oriented) frame led to thoughts about health consequences. Meanwhile, the secondhand smoke (other-oriented) frame led to thoughts about secondhand smoke. Notably, a basic perceptual processing was the attention selection and engagement. Attention selection and engagement was between message exposure and corresponding cognitive response, and could reflect the direct effect of message framing. In the same conceptualization of Shen's work, we propose that (Study 2):

Hypothesis 2a: Self-oriented threat appeals attract the recipients' attention to the smoker more immediately than do other-oriented threat appeals.

Hypothesis 2b: Other-oriented threat appeals attract the recipients' attention to the victim more immediately than do self-oriented threat appeals.

Relationship norms and congruency effects

Relationship norms may influence the effect of (self-oriented vs. other-oriented) threat appeals on the recipients' affective responses. The moderating roles of relationship norms in a business context have been explored extensively in previous research. Researchers have found that relationship norms had various influences on people's appraisal of marketing actions (Aggarwal, 2004), brand evaluations (Aggarwal, 2004; Aggarwal & Law, 2005), and responses to service failures (Wan, Hui, & Wyer, 2011). In a typical task, participants were asked to imagine a situation in which a brand or a company with which they had formed a relationship did something to them (e.g., service failures, fee charges, or maltreatment) and relate how they would react.

To our knowledge, all previous studies on relationship norms were performed through the lens of a passive receiver of stimulus. We wondered how a participant would respond if he or she was an agent. Specifically, how would a participant respond to a victim of secondhand smoking and to anti-smoking PSAs? Furthermore, whereas numerous studies on relationship norms have been performed in the context of consumption, studies on the ways that relationship norms influence the effectiveness of advertising have been fairly limited.

Whether and how a message frame works depends on whether it is congruent with an important characteristic of

the message recipient (Pan & Kosicki, 2005). Message frames that are tailored to match a characteristic of the recipients are effective. This act is called the *congruency effect* (Updegraff, Sherman, Luyster, & Mann, 2007). According to the theory of the congruency effect, threat appeal messages framed to match relationship norms were more effective than were mismatched messages. Clark and Mills (1993) distinguished between communal and exchange relationships based on interacting norms. In communal relationships, people were concerned about others' needs and well-being. In sharp contrast with communal relationships, people in exchange relationships focused on self-interest (Scott, Mende, & Bolton, 2013). Moreover, other-oriented threat framing emphasized the health risk to others whereas self-oriented threat framing highlighted the health risk to the smoker. Therefore, the congruency effect should be observed when threat-target frames matched the relationship norms. Accordingly, we posited that relationship norms might interact with threat-target framing to affect the recipients' emotions whereas the interaction effects varied for fear and guilt. Given that fear is closely related to health risks to self whereas guilt is related to the responsibility for harming others, we propose the following hypothesis (Study 3):

Hypothesis 3a: Self-oriented threat appeals elicit more fear than do other-oriented threat appeals when the exchange relationship norms are salient. However, this difference is not applicable to the communal relationship norms.

Hypothesis 3b: Other-oriented threat appeals elicit more guilt than do self-oriented threat appeals when the communal relationship norms are salient. Self-oriented threat appeals elicit less guilt than do other-oriented threat appeals when the exchange relationship norms are salient. The relationship norms do not moderate the effect of threat-target framing on the recipients' guilt response.

Previous research has addressed how target framing has influenced coping behaviors (Kelly & Hornik, 2016; Lipkus et al., 2013; Prematunge et al., 2014). Typically, these coping behaviors were all prescribed behaviors such as receiving a vaccine or reducing smoking; however, these behaviors could mix with one's own and others' interests. Was any difference present between behaviors aimed at one's interest and the others' interest? Therefore, the coping

behavior in Study 3 was additionally subdivided into coping responses aimed at either one's own or the others' interests. Coping behaviors aimed at one's interests were congruent with self-oriented threat appeal and exchange relationship norms whereas coping behaviors aimed at the others' interests were congruent with other-oriented threat appeal and communal relationship norms. Thus, we propose the following hypotheses (Study 3):

Hypothesis 4a: Self-oriented threat appeals elicit a stronger coping response that involves one's interest than do other-oriented threat appeals when the exchange relationship norms are salient. However, this difference is inapplicable to the communal relationship norms.

Hypothesis 4b: Other-oriented threat appeals elicit a stronger coping response that involves the others' interest than do self-oriented threat appeals when the communal relationship norms are salient. Self-oriented threat appeals elicit a weaker coping response that involves the others' interest than do other-oriented threat appeals when the exchange relationship norms are salient. The relationship norms do not moderate the effect of threat-target framing on the recipients' coping response involves others' interest.

We tested these hypotheses in three studies that used printed antismoking PSAs as stimuli. In Study 1, the emotions were explored when the threatened target in the PSAs was manipulated; the participants were smokers. In Study 2, we explored this effect using nonsmokers as participants and explored the basic cognitive process of the recipients by recording the recipients' perceptual processing pattern using eye-tracking technology. Eye-tracking records are good indicators of the recipients' visual attention (Wedel & Pieters, 2008). In Study 3, two types of relationship norms were primed in addition to varying the threatened target to address the congruency effect. Moreover, we adopted coping behavior as a dependent variable to investigate its effects.

Study 1

Methods

Participants

A total of 65 smokers (1 female, 64 male; $M_{\text{age}} = 36.7$, $SD = 10.4$) were recruited through an intercept survey. The

study was approved by the Research Ethics Review Board of the School of Journalism and Communication, Xiamen University. An oral announcement of the consent form was made after a participant agreed to participate in our survey. An oral consent was recommended because written methods were inconvenient for the participants.

Design and variables

This study has a two-factor mixed design, with threat-target framing as the between-subject factor and emotion-response types as the within-subject factor. Participants were randomly assigned to one of two threat-target framing conditions: self- and other-oriented. The emotion measure was a self-reported task in which the participants were asked to rate on the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) scales the emotions that they felt at the time they were looking at PSAs. Fear and guilt items were embedded among several other emotion items to minimize potential demand characteristics.

Materials and procedure

Three print ads represented antismoking PSAs. These print ads, which were sized 210 mm \times 150 mm, were created to exclude any confounding features and were presented in random order. The key elements of each ad were almost identical: two people, one smoker with a cigarette and another person beside him, as depicted in the picture. The threat target was manipulated through the ad copy whereas the ad image was constant across the two conditions (for the specific ads and the variations among the conditions, see Appendix S1). After participants looked at all three pictures, they were asked to answer the questions based on the PANAS scales.

Results and discussion

Emotions report

The items "scared," "nervous," "jittery," and "afraid" were collapsed to measure fear, and the items "guilty" and "ashamed" to measure guilt. A repeated measures two-way analysis of variance (ANOVA) revealed a significant interaction effect between the emotion type and threat-target framing, $F(1, 63) = 29.98$, $p < .001$, $\eta_p^2 = .32$. The simple main effect showed that other-oriented threat appeals elicited more guilt than did self-oriented threat appeals ($M_{\text{self}} = 2.68$, $SD = 1.19$; $M_{\text{other}} = 3.82$, $SD = 1.01$), $F(1, 63) = 17.27$,

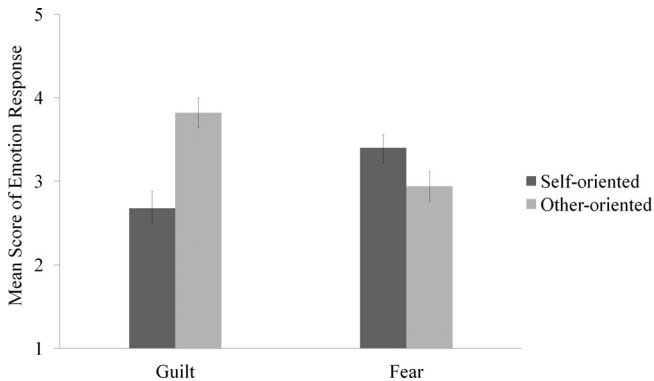


Figure 1. Participants' emotion response in the two appeals conditions (Study 1).

$p < .001$. Self-oriented threat appeals elicited marginally more fear than did other-oriented threat appeals ($M_{\text{self}} = 3.40$, $SD = 0.96$; $M_{\text{other}} = 2.94$, $SD = 1.00$), $F(1, 63) = 3.60$, $p = .062$ (see Figure 1). Thus, threat-target framing affects the smokers' emotions, and the results support Hypothesis 1b, but not Hypothesis 1a, contradicting Shen's (2010) results. The aims of antismoking PSAs included dissuading nonsmokers from smoking, an aim that was at least as important as if not more important than encouraging smokers to quit (Beltramini & Bridge, 2001). College students were the intended target recipients of numerous antismoking PSAs (Shen, 2010). Thus, Study 2 revalidated Hypotheses 1a and 1b and expanded them by testing the basic perceptual processing pattern of nonsmokers.

Study 2

Methods

Participants

A total of 50 undergraduates and postgraduates (30 female, 20 male; $M_{\text{age}} = 23.34$, $SD = 2.12$) were recruited at a university. None of the participants self-identified as smokers in this study. Each participant was given a small gift worth ~5 RMB for their participation. Participants were recruited through an advertisement, which included an informed consent. An oral consent form was restated before the experiment started. Given that the protocol had low risk, a written consent was not obtained.

Design and variables

The design was the same as in Study 1, except that a new dependent variable was added. Participants' attention

selection was measured by their gaze shift (Bolmont, Cacioppo, & Cacioppo, 2014; Pieters, Wedel, & Zhang, 2007). The metric was obtained using eye-tracking technology: time to first fixation (TFF); that is, how long it took before a participant was fixated on areas of interest (AOI). This measurement reflected how soon or early the participant paid attention to the object. The metric was calculated for the two AOIs in the picture: the smoker and the nonsmoker.

Materials and procedure

The print ads were the same as those in Study 1; however, their size was 800 pixels \times 500 pixels to fit the eye-tracking monitor. Each participant responded individually in a 10-min session in an eye-tracking laboratory. Eye movements were recorded using a Tobii T60 eye tracker (17-in. TFT monitor, 1,280-pixel \times 1,024-pixel resolution) and Tobii Studio Version 3.3.0. (Tobii Technology AB, Danderyd, Sweden). The participant was first asked to sit in front of the eye tracker. The formal experiment ran after a standard calibration. Next, participants were shown a general instruction page which read: "Please view each page carefully and thoroughly. Please press the 'space' key to go to the next page after you finish this." Then, they were shown specific instructions which read: "Please assume that you are a regular smoker and now imagine your smoking scene as clearly as possible. The next pages contain three PSAs. Some questions about these PSAs will be asked after the completion of this procedure." The aim of this instruction was to ensure that the participants developed true emotions by personalizing the message and by encouraging the participants' involvement (Brennan & Binney, 2010; Chang, 2012). The eye-tracking procedure is presented in Figure 2.

After participants had finished the eye-tracking procedure, they were asked to complete a paper-and-pencil measure that required them to report the emotions that they felt while looking at the PSAs.

Results and discussion

Emotions report

A repeated measures ANOVA revealed a significant interaction effect between emotion types and threat-target framing, $F(1, 48) = 30.46$, $p < .001$, $\eta_p^2 = .39$. The simple main effect showed that other-oriented threat appeals evoked more guilt than did self-oriented threat appeals ($M_{\text{self}} = 1.98$,

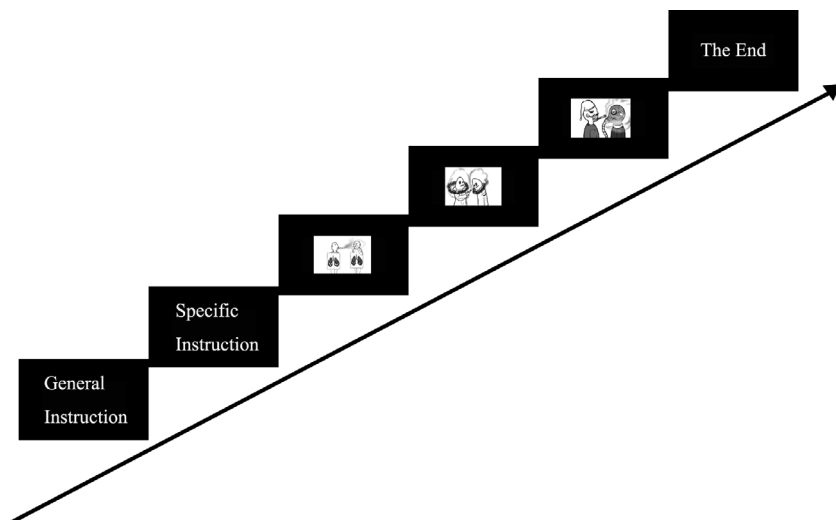


Figure 2. Illustration of the stimulus and procedure.

$SD = 0.98$; $M_{\text{other}} = 2.76$, $SD = 0.89$), $F(1, 48) = 8.63$, $p = .005$, whereas self-oriented threat appeals evoked more fear than did other-oriented threat appeals ($M_{\text{self}} = 3.05$, $SD = 0.80$; $M_{\text{other}} = 2.21$, $SD = 0.66$); $F(1, 63) = 16.31$, $p < .001$ (see Figure 3). The results were consistent with those of Study 1.

Eye-tracking measures

Single-factor between-subject ANOVAs were performed for the TFF in the two AOIs. For the smoker's AOI (information related to the recipient's own interest), analysis of the TFF revealed a significant main effect of threat-target framing, $F(1, 48) = 4.57$, $p = .038$, $\eta_p^2 = .09$. Results showed that the recipients rapidly paid attention to their own interest when they were targeted by threat appeals versus when the threat appeals targeted other people, thus supporting Hypothesis 2a. For the other people's AOI (information related to others' interests), analysis of the TFF revealed no main effect, $F(1, 48) = 0.22$, $p = .639$, $\eta_p^2 = .01$, of threat-target framing. This result showed that recipients did not pay attention to others' interests more

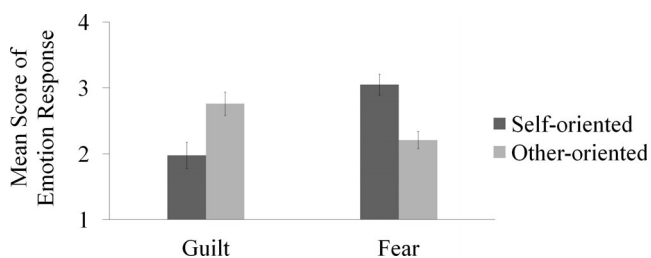


Figure 3. Participants' emotion response in the two appeals conditions (Study 2).

immediately, even when the threat to others was highlighted. Thus, Hypothesis 2b was rejected.

One aim of Study 2 was to expand the message framing effect from emotion response to basic perceptual response. The eye-tracking result showed that self-oriented threat appeals attracted the recipients' attention to the smoker earlier than did other-oriented threat appeals, thus supporting Hypothesis 2a. However, other-oriented threat appeals did not attract the recipients' attention to the victim earlier than did self-oriented threat appeals, thus rejecting Hypothesis 2b.

Another aim of Study 2 was to reexamine the result from smokers (Study 1) to nonsmokers. The two studies showed that other-oriented threat appeals evoked more guilt than did self-oriented threat appeals whereas self-oriented threat appeals evoked more fear than did other-oriented threat appeals.

Study 3

Method

Participants and design

A total of 117 undergraduates and postgraduates (62 females, 55 males; $M_{\text{age}} = 22.83$, $SD = 2.39$) were recruited at a university. None of the participants self-identified as smokers in this study. They were given a small gift worth ~5 RMB for their participation.

Design and variables

This study was a 2 (message frame: threat target to self vs. others) \times 2 (relationship norms: communal vs. exchange) between-subjects design. Participants were randomly assigned

to one of the four conditions. Emotion measurements were exactly the same as those in Study 1. The other dependent measure of coping behavior comprised four items on a 7-point scale of 1 (*definitely disagree*) to 7 (*definitely agree*). Namely, “I will search for information about smoking to learn about the possible harm to myself” and “I will go to the clinic for checkups” were used as coping behaviors aimed at self-interest. The statements “I should take responsibility for Liming’s cough” and “I will find out the details about Liming’s cough” were used as coping behaviors aimed at the others’ interest.

Materials and procedure

The salience of the relationship was manipulated using unobtrusively priming techniques (Aggarwal, 2004). The scenarios were adapted from Wan et al. (2011) to prime either the communal or exchange relationship norms (see Appendix S2). Specifically, we highlighted a sentence that said: “You maintained the habit of smoking when you stayed with Liming, even though he never smoked.”

Two manipulation tasks were completed in the pretest, $n = 66$. One was an emotion check, and the other was a relationship manipulation check. The 20-item PANAS scales (Watson et al., 1988) that we used as a control for the influence of emotions were analyzed, showing no significant effects of relationship type on positive emotions ($M_{\text{Com}} = 2.02$, $M_{\text{Exch}} = 1.96$), $F(1, 60) = 0.17$, $p = .679$, $\eta_p^2 = .003$, or negative emotions ($M_{\text{Com}} = 1.32$, $M_{\text{Exch}} = 1.34$), $F(1, 63) = 0.04$, $p = .838$, $\eta_p^2 = .001$, in either condition. A Chinese version (Huang, Cai, Zhou, & Zhu, 2009) of the relationship manipulation check, which contained six items on a 7-point scale or 1 (*definitely disagree*) to 7 (*definitely agree*), were adapted from Aggarwal (2004) as the second manipulation task. Three items (“The restaurant of Liming treat you special,” “They care,” “They like you”) that tapped into the salience of the communal norms were averaged to provide a net communal score. The remaining three items (“The restaurant of Liming is good value for money,” “Give service to get business,” “You get your money’s worth”), which tapped into the salience of the exchange norms, were averaged to provide a net exchange score. High net communal scores and low net exchange scores were expected in the communal relationship priming group whereas the score pattern was expected to be reversed in the exchange relationship priming group. Results showed that participants in the communal relationship priming group

provided higher net communal scores ($M_{\text{Com}} = 5.59$, $M_{\text{Exch}} = 4.63$), $F(1, 64) = 33.46$, $p < .001$, $\eta_p^2 = .34$, and lower net exchange scores ($M_{\text{Com}} = 4.56$, $M_{\text{Exch}} = 5.83$), $F(1, 64) = 32.79$, $p < .001$, $\eta_p^2 = .34$, than did those in the exchange relationship priming group. These results confirmed the success of the manipulation.

The procedure of the major study is as follows: first, participants were asked to read the scenario twice to prime either the communal or the exchange relationship. Second, they were asked to watch a screen with a specific instruction that stated

Please assume that you are a regular smoker and now imagine your smoking scene as clearly as possible. You will see three public service announcements on the road to Liming’s restaurant. Please press the spacebar to see these PSAs. Some questions about these PSAs will be asked after the procedure is done.

Third, participants were asked to report their emotions after the eye-tracking procedure. Fourth, they were asked to imagine this scenario, which stated that “You habitually lit a cigarette after you arrived at Liming’s restaurant. You noticed that Liming coughed violently when you conversed with him.” Finally, the five-item coping behavior measure was taken.

Results and discussion

Emotions report

Two separate 2 (relationship norms) \times 2 (threat-target framing) between-subject ANOVAs for fear and guilt were conducted (Figure 4).

For the aspect of fear, the ANOVA revealed no main effect of threat-target framing, $F(1, 113) = 1.20$, $p = .276$, $\eta_p^2 = .011$,

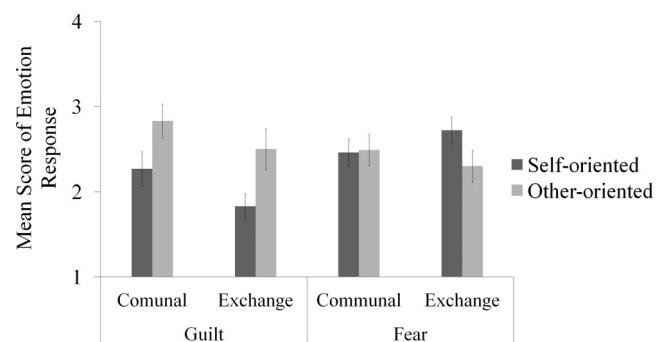


Figure 4. Participants’ emotion response as a function of relationship norms and threat-target framing (Study 3).

no main effect of relationship norms, $F(1, 113) = 0.04$, $p = .837$, $\eta_p^2 < .001$, or an interaction effect of relationship norms and threat-target framing, $F(1, 113) = 1.69$, $p = .196$, $\eta_p^2 = .015$. This result indicated that self-oriented and other-oriented threat appeals elicited the same amount of fear regardless of whether the exchange or the communal relationship norms were salient. Nonetheless, a planned simple effect test showed that self-oriented threat appeals evoked marginally more fear than did other-oriented threat appeals when the exchange relationship norms were salient ($M_{\text{self}} = 2.72$, $SD = 0.89$; $M_{\text{other}} = 2.30$, $SD = 1.05$), $F(1, 114) = 2.87$, $p = .093$. However, when the communal relationship norms were salient, the effect was insignificant ($M_{\text{self}} = 2.46$, $SD = 0.88$; $M_{\text{other}} = 2.49$, $SD = 0.99$), $F(1, 114) = 0.02$, $p = .881$. Thus, Hypothesis 3a was partly supported.

For the aspect of guilt, the ANOVA revealed that the main effect of threat-target framing was significant, $F(1, 113) = 9.50$, $p = .003$, $\eta_p^2 = .078$. Moreover, the main effect of relationship norms was marginally significant, $F(1, 113) = 3.68$, $p = .058$, $\eta_p^2 = .032$, and the interaction effect of relationship norms and threat-target framing was insignificant, $F(1, 113) = 0.08$, $p = .778$, $\eta_p^2 = .001$. The ANOVA analysis indicated that other-oriented threat appeals evoked more guilt than did self-oriented threat appeals, regardless of whether the exchange or the communal relationship norms were salient. This result was consistent with Studies 1 and 2 in which other-oriented threat appeals could evoke more guilt than could self-oriented threat appeals. Thus, Hypothesis 3b was supported.

Coping behavior

Two separate 2 (relationship norms) \times 2 (threat-target framing) between-subject ANOVAs for coping behaviors

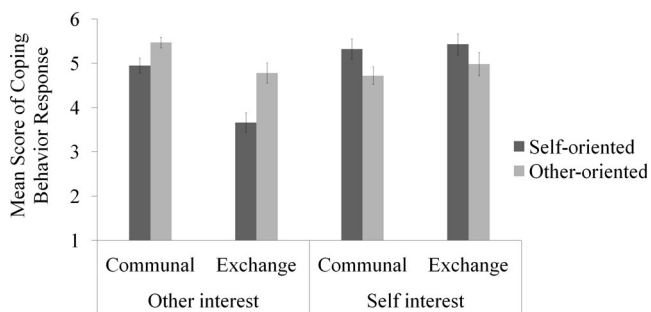


Figure 5. Participants' coping behaviors as a function of relationship norms and threat-target framing (Study 3).

that involved self's interests and others' interests were conducted (Figure 5).

For the coping response that involved one's interest, the ANOVA revealed that the main effect of threat-target framing was significant, $F(1, 113) = 4.89$, $p = .029$, $\eta_p^2 = .041$. The main effect of relationship norms was not significant, $F(1, 113) = 0.63$, $p = .430$, $\eta_p^2 = .006$, and the interaction effect of relationship norms and threat-target framing was not significant, $F(1, 113) = 0.09$, $p = .760$, $\eta_p^2 = .001$. Self-oriented threat appeals elicited a stronger coping response that involved one's interest than did other-oriented threat appeals, regardless of whether the exchange or the communal relationship norms were salient. Nonetheless, a planned simple effect analysis showed that self-oriented threat appeals made the coping behaviors that targeted self-interests marginally stronger than did other-oriented threat appeals when the communal relationship norms were salient ($M_{\text{self}} = 5.32$, $SD = 1.26$; $M_{\text{other}} = 4.72$, $SD = 1.08$), $F(1, 114) = 3.17$, $p = .078$. However, when the exchange relationship norms were salient, the effect was not significant ($M_{\text{self}} = 5.43$, $SD = 1.31$; $M_{\text{other}} = 4.98$, $SD = 1.42$), $F(1, 114) = 1.80$, $p = .182$. Thus, Hypothesis 4a was also partly supported.

For the coping response that involves the others' interest, the ANOVA revealed that the main effect of threat-target framing was significant, $F(1, 113) = 18.36$, $p < .001$, $\eta_p^2 = .14$. In addition, the main effect of relationship norms was not significant, $F(1, 113) = 27.00$, $p < .001$, $\eta_p^2 = .193$, and the interaction effect of relationship norms and threat-target framing was not significant, $F(1, 113) = 2.51$, $p = .116$, $\eta_p^2 = .022$. By contrast, other-oriented threat appeals were more effective in guiding recipients to pay attention to the others' interest. Thus, Hypothesis 4b was supported.

General discussion

Numerous studies on antismoking PSAs have focused on the effectiveness of message frames (Bartels et al., 2010; Chang & Lee, 2010; Okazaki, Mueller, & Taylor, 2010). The current research provided a new, empirically based instantiation in this field.

Regarding emotion response, threat-target framing might have various impacts on the recipients' emotion types. Other-oriented threat appeals evoked more guilt than did self-oriented threat appeals. This effect was not influenced

by relationship norms in which the result was reasonable because people should feel more guilt when they harmed others rather than when they harmed themselves. However, why did Shen (2010) show that self-oriented threat frames led to more guilt than other-oriented threat frames? Based on our analysis, all the stories in Shen's study were narrated from the third-person perspective, and the negative consequences were irrelevant to the recipients. Therefore, other-oriented threat appeals did not evoke more guilt than did self-oriented threat appeals. As for the fear response, our findings were mixed, and some results contradicted Shen's findings and Block's (2005) research. All three studies contradicted one another—the question about how threat-target framing affected the recipients' fear differently was more complicated than we had thought.

Regarding the recipients' attention, threat-target framing directed the recipients' attention to the corresponding information elements. Self-oriented threat appeals directed the recipients' attention to the smoker earlier than did other-oriented threat appeals, but the two types of threat appeals did not affect the recipients' attention to the victim differently. The effect of threat-target framing on the recipients' attention to the smoker was consistent with our expectation, but not on the recipients' attention to the victim. This study could not provide a reasonable explanation, and further research was needed to explore this phenomenon.

For coping behavior, which was divided into those that targeted self-interests and those that targeted other-interests, threat-target framing influenced the two types of coping behavior differently. Other-oriented threat appeals elicited a stronger coping response that involved the others' interest than did self-oriented threat appeals, regardless of what type of relationship norms was salient. For the coping response that involved self-interest, the result was confusing. Nonetheless, the coping behaviors were subdivided into various types for the first time in this study, and this approach could be potentially fruitful for future research. Overall, this study showed that threat-target framing affected the recipients' emotion, attention, and coping behavior differently whereas the relationship norms moderated the effects on oneself, but not on others.

Some study limitations that might reveal opportunities for future investigation should be noted. First, to ensure that the visual elements were identical across all materials, the PSAs we used as stimuli were antismoking PSAs. Threat appeals have been also widely utilized in PSAs on disease prevention (Dillard & Nabi, 2006), road safety

(Carey, McDermott, & Sarma, 2013), vaccination, and safe sex (Peters, Ruiters, & Kok, 2013). Future research should examine our findings by recruiting people who were actually involved in a particular risky behavior and by utilizing various types of threat appeals. Second, we depicted the smoker and the nonsmoker as having a real relationship in the scenario. However, the research of Aggarwal and Law (2005) showed that relationship norms could work as pure contextual factors, even when no actual relationships existed. Could the moderating effect of relationship norms that we identified in our study extend into situations where no actual relationship existed? If communal relationship norms were activated in a smoker's mind, could he or she become concerned even about strangers' interests and inhibit his or her smoking impulses? This question should be considered in future research. Third, the effect size in Study 3 was lower than those in Studies 1 and 2, and an excessive marginal significance of those effects made us consider increasing the sample size in future research.

This study contributed to the theoretical underpinnings of research on PSAs by expanding our understanding of the antecedent of the persuasiveness of PSAs. Our findings were important in that these three studies used diverse dependent variables to investigate the ways that ad framing and contextual factors affected people's perceptions, emotions, and behavior, thus exhibiting the effectiveness of PSAs. After scrutinizing the current categories of message frames and the practices of PSAs, we observed that few studies focused on the effects of framing PSAs in terms of threat or benefits to self or others. Hence, a clear conceptualization of "threat-target framing" was proposed, and its effect on the persuasiveness of PSAs was verified in this study. Regarding regular dependent variables, the emotional and behavioral responses were explored whereas the behavioral response was subdivided into two types to reflect the subtle effect difference of threat-target framing. With the exception of the basic dependent variable, the attention selection and engagement were addressed using eye-tracking technology. Thus, these findings added to the considerable literature on message framing. Second, to our knowledge, this study was the first to integrate theories on message frames and relationship norms in PSA research. We used a priming technique to manipulate the salience of the relationship norms when the recipients watched the PSAs. The findings amplified our understanding of the subtle impact of placement contexts.

On a practical level, our findings could help advertisers produce effective threat appeals and ad placements. For example, the ads' verbiage might direct the recipients' perceptual and emotional responses, even when the image is held constant. By examining differences in the subjects' responses after priming, our findings also highlighted the importance of the placement of ads in appropriate media content and contexts. These effects should not be limited to printed ads. The programs that preceded target ads influence the persuasiveness of ads by priming or activating the recipients into a specific mood (Kamins, Marks, & Skinner, 1991) or a promotion or prevention regulatory focus (Kim, 2006). In the same vein, TV shows about kinship or friendship might be able to activate communal relationship norms whereas TV shows about business could activate exchange relationship norms. Placing self-oriented threat appeal ads after TV shows about business and other-oriented threat appeal ads after TV shows about kinship or friendship could maximize the differences in the recipient's response between the two types of ads. To obtain the desired effect, advertisers should choose TV shows that are likely to activate the intended relationship norms and place the subsequent PSAs correspondingly.

Disclosure of conflict of interest

The authors declare that there are no conflicts of interest.

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Supporting information

Additional Supporting Information may be found in the online version of this article at the publisher's web-site: <http://onlinelibrary.wiley.com/doi/supinfo>.

Appendix S1. Picture used in Studies 1 and 2.

Appendix S2. Scenario descriptions for manipulation of the relationship norms*