

FULL PAPER

The effectiveness of a positively vs. negatively valenced PSA against sexually transmitted diseases – evidence from an experimental study

Die Effektivität einer positiv vs. negativ valenten Gesundheitsbotschaft gegen sexuell übertragbare Krankheiten – Ergebnisse aus einer experimentellen Studie

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Abstract: This study examines the effects of positive compared to negative appeals in persuasive health communication about sexually transmitted diseases (STDs). The theoretical background draws on the Extended Parallel Process Model, which is mainly used to explain the processing of negative appeals (fear) in these contexts. Participants ($N = 160$; $M_{\text{age}} = 22.59$, $SD = 2.48$, 57.4% female; mainly students) took part in a one-factorial experiment by viewing an advertisement promoting the use of condoms that was emotionally framed as either humorous (positive) or threatening (negative) to induce an emotional experience of joy or fear, respectively. Emotional experiences were tested as predictors for health behavior-related outcomes by means of hierarchical regression analyses. Data provides evidence for the beneficial effect of positive emotional appeals on message judgment and attitudes towards the proposed behavior. The threatening appeal reduced perceptions of efficacy and led to an increase in reactance. These findings provide further evidence for carefully using fear appeals in persuasive health communication and speak in favor of integrating positive emotional appeals in these contexts.

Keywords: Emotions; humor; information processing; persuasive health communication; sexually transmitted diseases.

Zusammenfassung: Die vorliegende Studie untersucht die Auswirkungen von positiven vs. negativen Appellen in der persuasiven Gesundheitskommunikation vor dem Hintergrund sexuell übertragbarer Krankheiten (SÜKs). Der theoretische Hintergrund stützt sich auf das Extended Parallel Process-Modell, welches die Verarbeitung von Fruchappellen abbildet. In einem einfaktoriellen Experiment wurden TeilnehmerInnen ($N = 160$; $M_{\text{age}} = 22.59$, $SD = 2.48$, 57.4% weiblich; hauptsächlich Studierende) mit einem Spot zur Förderung der Verwendung von Kondomen konfrontiert. Dieser variierte hinsichtlich seiner Emotionalität – entweder humorvoll oder bedrohlich –, um eine entsprechende emotionale Reaktion von Freude bzw. Furcht hervorzurufen. Diese emotionalen Reaktionen wurden anschließend als Prädiktoren für zentrale gesundheitsrelevante Faktoren des Modells untersucht. Die Resultate zeigen die förderliche Wirkung positiver emotionaler Appelle auf die Bewertung der Botschaft an sich sowie die Einstellung gegenüber dem in der Botschaft vorgeschlagenen Verhalten. Demgegenüber reduzierte der bedrohliche Appell die Wahrnehmung

der Wirksamkeitseinschätzung und löste Reaktanz aus. Den Ergebnissen folgend sollten Furchtappelle entsprechend mit Vorsicht eingesetzt. Der Einsatz emotional positiv – in diesem Fall humorvoll – gerahmter Appelle in der persuasiven Gesundheitskommunikation scheint eine vielversprechende Alternative zu klassischen Furchtappellen sein.

Schlagwörter: Emotionen; Humor; Informationsverarbeitung; persuasive Gesundheitskommunikation; sexuell übertragbare Krankheiten.

1. Introduction

Communicating risks is an essential task in health communication. Academic scholars as well as practitioners try to find appropriate ways to bypass information overload and defense mechanisms against persuasive communication to foster, change, and stabilize desirable attitudes and healthy behaviors as well as to increase individual or societal awareness of risks (e.g., Myrick, 2016; Nabi, 2015). In contrast to environmental (i.e., natural disasters) or economic risks (i.e., recession), health hazards generally tend to possess high relevance for individuals.

While research and models regarding the individual perception of risk explicitly stress the importance of positive emotions and their impact on behavior (e.g., Västfjäll & Slovic, 2013), health communication and the corresponding research has focused for a long time on triggering negative emotions, especially fear (Basil & Witte, 2011; Earl & Albarracín, 2007; Ruiter, Kessels, Peters, & Kok, 2014; Witte & Allen, 2000). Countering this trend, more and more researchers are investigating the deployment and effects of positive appeals, e.g., pride, joy, and other entertaining characteristics, in messages (e.g., Fredrickson, 2013; Myrick, 2015). In many cases humor seems to be seen as a promising and effective alternative to conventional fear appeals. Lately, such tendencies are reflected in the attention, research in persuasive health communication research is paying to approaches that are of a more “positive” or encouraging nature (Myrick, 2015). In particular, the use of humor in persuasive messages has been investigated with regard to different formats such as existing (Jäger & Eisend, 2013) or mock-up PSAs (Mukherjee & Dubé, 2012), comics (Holmes, 2013), graphic novels (Lo-Fo-Wong et al., 2014), TV shows (Moyer-Gusé, Robinson, & McKnight, 2018), and social media (Evers, Albury, Byron, & Crawford, 2013). Moreover, research explores the effects of a humorous framing with respect to different topics such as skin cancer, nutrition, and the consumption of tobacco and alcohol (for an overview see Schwarz & Reifegerste, 2018). While there is a growing number of studies about humor in general, there is still a lack of research that aims to empirically investigate the different potentials of humor appeals compared to conventional fear appeals by means of a direct comparison within a rigorous non-confounded design. That is why this study aims to contribute to and broaden the knowledge about the effects of humorous compared to threatening emotional appeals on the effectiveness of persuasive health messages. It will do so with particular focus on risk perception, message processing, and behavior-relevant factors. In order to investigate the effects of interest, a one-factorial experiment was conducted varying the “emotional frame” (humorous vs. threatening) of a public service announcement (PSA) promoting the use of condoms.

2. Theoretical framework

In general, risks can be described as “specific hazards to humans and what they value” (Hohenemser, Kates, & Slovic, 1985, p. 78). While risk is a multifaceted concept with varied interpretations and conceptualizations, there is some consensus that the perception of risk includes three crucial factors: 1) loss (Leiss, 2004, p. 399), 2) the perceived susceptibility (i.e., uncertainty or probability of being affected) to said loss, and 3) the perceived severity (i.e., significance, consequences, and magnitude) of experiencing said loss (Bodemer & Gaissmaier, 2015; Sjöberg, Moen, & Rundmo, 2004; Yates & Stone, 1992).

Based on this definition, fear appeals¹ are regularly applied in health communication to inform the public about health-related risks (Ruiter et al., 2014), which can also be seen to have a negative effect on people’s personal health. Much research in this context focuses on the effects of fear appeals. Respective studies are often grounded on the *Extended Parallel Process Model* (EPPM); (Witte, 1992) and its predecessors. According to this model, the effects of threatening communication can be explained by considering four features of a message: severity, susceptibility, self-efficacy, and response efficacy. While severity and susceptibility affect the perception of a threat, self-efficacy and response efficacy contribute to the appraisal of coping possibilities. On an individual level, the relationship between threat appraisal and coping appraisal determines whether so-called fear control or danger control processes are triggered. A danger control process – characterized by a “sufficiently” high level of threat perception² and a high level of perceived efficacy – leads to the acceptance of the message’s recommendations and subsequent adaptive reactions. In contrast, a fear control process – the result of a strong threat perception and low levels of perceived efficacy – provokes reactance towards the messages’s implications which is followed by maladaptive reactions (Witte, 1992). Consequently, efficacy information in a health message should act as a buffer to prevent threat appeals from backfiring, resulting in maladaptive responses such as reactance.

Research in this area has been available for over half a century and has mainly focused more on the effects of threatening cues within messages and less on efficacy-promoting or threat-decreasing cues. This might explain the mixed empirical support for the effectiveness of fear appeals: while fear appeals indeed seem to work to change peoples’ attitudes or convince them to refrain from unhealthy behavior – at least for a short period of time – it has been repeatedly demonstrated that fear appeals run the risk of producing defensive responses, maladaptive behavior, and other negative outcomes. These include feelings of shame, guilt, and disgust that limit or even inhibit the desired effects (see, for example: Carey, McDermott, & Sarma, 2013; Peters, Ruiter, & Kok, 2013; Ruiter et al., 2014; Tannenbaum et al., 2015; Witte & Allen, 2000).

- 1 Generally, fear appeals are defined as “persuasive messages designed to scare people by describing the terrible things that will happen to them if they do not do what the message recommends” (Witte, 1992, p. 329).
- 2 The model assumes that insufficient levels of perceived threat fail to trigger further processing of the message.

Because of these inconclusive results about the ambiguous effects of threatening messages, health-communication interventions are increasingly focused on the possible benefit of “positive” or otherwise encouraging messages that motivate people to adopt a certain behavior (Nabi, 2016; Pressman & Cohen, 2005). This can be done, for example, by emphasizing efficacy cues in messages with the hope that their effectiveness will provide a buffer against the detrimental effects of threat and fear (threat → fear → reduce fear by showing a solution, e.g., adopting a recommended behavior → facilitate this adoption by heightening efficacy perceptions). Besides simply introducing or stressing an efficacy cue within a message, another strategy is to frame the whole health message in a positive way (e.g., by inducing joy or happiness). The term “frame a fear appeal” is used here because as a basic principle all risk messages have an inherently “negative” aspect. More precisely, all health risks convey a potential loss, but the use of positive cues within a health narrative (here: a persuasive message) can help to “re-frame” the primal threat perception (“negative” or threatening by nature) (Nabi, 2016). In other words, a risk targeted by persuasive health interventions can become (re-)framed³ by means of “positive” emotional cues within the message. Hence, information about health risks can be “wrapped” in an entertaining or otherwise positive envelope, thereby eliciting positive emotional responses. It is expected that this emotional wrapping of health risks affects the primal fear response and influences further information processing and decision making. The beneficial effects of this emotional framing can be manifold: it can, e.g., reduce reactance or improve message judgment (Forgas, 1995; Forgas & Koch, 2013; Ort & Fahr, 2018). Nabi (2016) also stresses that positive messages can increase individuals’ motivation to change their behavior to overcome threat perceptions.

One type of emotional framing that is frequently discussed in this context is humor. On a cognitive level, the nature of humorous information is supposed to foster cognitive processing by compelling individuals to intensively engage with the content in order to resolve frequently contained incongruencies (Schwarz & Hoffmann, 2009). Moreover, humor itself can act as an affective distraction, thereby covering persuasive intent or acting as a buffer against strongly incongruent content. For example, Alden, Mukherjee, and Hoyer (2000) argue that humor can act as a safety cue or buffer that positively influences the negative arousal caused by a message about a health threat, thereby leading to attitude change. Consequently, a joyful experience induced by humor can help to reduce maladaptive responses to the message while at the same time promoting the chances of adaptive outcomes such as attitude change or behavior change in an advocated way. This buffer function or safety cue also helps reduce reactance responses such as counterarguing or downplay of information (Moyer-Gusé, Mahood, & Brookes, 2011). Indeed, a variety of studies provide empirical evidence for the supportive impact of humorous messages on health-related behavior (e.g., Blanc & Brigaud, 2014; Evers et al., 2013; Lo-Fo-Wong et al., 2014). Besides those direct effects on mes-

3 We would like to point out that the use of the term “frame” must not be confused with the widely accepted and regularly discussed concept of framing in journalism studies (Entman, 1993). Our understanding points to the idea that information is presented with a positive or negative connotation.

sage processing and behavioral outcomes, portraying health risks and corresponding behaviors humorously can help to overcome embarrassment (Yoon, 2015).

However, utilizing humor also bears the risk of creating unwanted effects. There are indications that positive emotions may attenuate the perception of the severity of a threat, thereby facilitating insouciance or unrealistic optimism (Shepherd, Waters, Weinstein, & Klein, 2015). A humorous depiction of unhealthy consequences of a behavior could lead to a risk being considered as unproblematic or to appear trivial, which would impair or even reverse the intended effects (McGraw, Schiro, & Fernbach, 2015; Moyer-Gusé et al., 2011). At the same time, humor can trigger a sense of stigmatization in those individuals already affected by the negative consequences of a health risk or partaking in risky behaviors (Kim & Willis, 2007; McNicol & Weaver, 2013).

3. The present study

Given the discussed potentials and risks of framing persuasive health messages in a positive – particularly humorous – way, the present study aimed to provide further insight into this positive strategy and its effects. Taking Witte's (1992) *EPPM* as a theoretical framework, the following design was created to explore the effects of framing a risk behavior positively (humorous) compared to negatively (threatening) within a health message on: 1) threat and coping appraisals, and 2) behavior-relevant factors and outcomes (i.e., reactance, message judgment, attitude, and behavioral intention).

While humorous framing of a risk behavior should lead to the emotional experience of joy (Martin, 2010; Nabi, 2016; Plutchik, 1980), a threatening framing should lead to the experience of fear (Öhman, 2008). Fear and joy (elicited by threat and humor) were chosen since those emotions are regularly provoked by health communication measures (e.g., Cohen, Shumate, & Gold, 2007; Lee & Cheng, 2010). A popular example of a PSA in this context is the “*It's never just HIV*” campaign, launched in 2010 by the NYC Department of Health and Mental Hygiene, which relied on the effectiveness of shock and fear. On the contrary, the campaign “*Mach's mit!*” (a play on words referring to the slogan “join in” but changing it to the meaning of “do it with [a condom]”), launched by the Federal Centre for Health Education in Germany at the end of the 1980s, profits from the beneficial effects of addressing a sensitive issue in a humorous way. Moreover, humor and threat can be seen as model systems to compare positively vs. negatively framed messages since fear is one of the states that is most distinct from joy (Martin, 2010). Hence, these two ways of emotional framing (threat vs. humor) are expected to elicit distinctly negative (fear) or positive (joy) emotional experiences, respectively. In turn, both types of emotional experience should affect message processing – in particular fear and danger control processes – that are the central components of the underlying theoretical model (*EPPM*). It is assumed that:

H1: Negative emotional experiences (fear) will (a) reinforce perceived threat and (b) lower perceived efficacy.

H2: Positive emotional experiences (joy) will (a) lower perceived threat and (b) enhance perceived efficacy.

Past research has also shown joy (resulting from humorous message cues) may ultimately provide health promoting effects through its positive impact on message processing, which promotes adaptive responses (Fredrickson, 2001, 2013; Lewis, Watson, & White, 2013; Martin, 2010; Monahan, 1995; Myrick, 2015; Nabi & Myrick 2018). Such positive effects are reflected by a more favorable message judgment and less reactance. In comparison, the experience of fear (resulting from threatening message cues) potentially increases the risk of negative effects or defensive responses, such as message avoidance, counterarguing, and an increase in reactance (Kok, Peters, Kessels, ten Hoor, & Ruiter, 2018; Witte, 1992; Witte & Allen, 2000). Thus, it is predicted that:

H3: Negative emotional experiences (fear) are associated with (a) more negative judgments of the message and (b) increased reactance towards the persuasive attempt.

H4: Positive emotional experiences (joy) are associated with (a) more positive judgments of the message and (b) reduced reactance towards the persuasive attempt.

Finally, appeals that strategically emphasize the threat, despite their potentially inhibiting effect with regard to message processing, are likely to succeed by scaring or shocking people into healthy behaviors. On the contrary, positive approaches exploit the additional motivational energy to elicit approach motivations towards the behavior proposed in the message by creating a more pleasant framework. However, both approaches have the potential to change behavior-relevant factors. This is why it is expected that:

H5: Positive (joy) as well as negative (fear) emotional experiences will positively impact (a) attitudes and (b) behavioral intentions towards the proposed behavior.

For a summary and schematic overview about the proposed sets of hypotheses, see Figure A1 in the appendix.

As elaborated above, both negative and positive emotional experiences can be expected to have beneficial outcomes. However, most studies do not compare positive to negative appeals directly, but rather focus on the effects of one emotion. Therefore, it seems to be important to compare their effectiveness in reaching health-relevant communicative goals. Thus, the following question is asked:

RQ: Are positive or negative emotional experiences more effective in creating health-promoting outcomes?

4. Methods

4.1. Research design, participants, and procedure

A one-factorial experimental design was employed in varying the emotional framing (threat vs. humor) of a PSA about sexually transmitted diseases (STDs). Participants were recruited at a mid-sized university in Switzerland using a predetermined ratio (equal number of men and women, aged 18 to 30; balanced experimental groups with respect to gender). The final sample contained 160 completed (pre- and post-viewing) questionnaires. Most participants were in their

twenties ($M_{\text{age}} = 22.59$, $SD = 2.48$, 57.4% female) with a rather high level of formal education (more than 75% of participants had at least a high school diploma). After completing the recruiting and consent gathering procedures, the participants received an initial questionnaire that was submitted at least three days before the actual laboratory appointment and contained general questions (e.g., about personality traits and sociodemographic data). This questionnaire also assessed central constructs of the underlying model (EPPM) as well as prior knowledge about STDs and sexual behavior (see below). On the day of the appointment, participants were randomly assigned to one of the experimental conditions. After they saw the stimulus, they completed the post-viewing questionnaire, reporting their perception of the PSA (emotional experiences, attention, perceived threat, and perceived efficacy), their evaluation of the message (message judgment and reactance), as well as attitudes and behavioral intentions with regard to the suggested behavior (see measures described below and in Table 1). Data collection took place between February 22 and March 24, 2016.

4.2. Materials

STDs and the protective use of condoms were chosen as a topic because of their ongoing significance in health promotion: more than one million STIs are acquired worldwide every day. While most STIs can be treated if diagnosed, 940,000 people died from HIV-related causes globally in 2016⁴. Moreover, over 900,000 pregnant women were infected with syphilis, resulting in approximately 350,000 adverse birth outcomes, including stillbirth, in 2012 (WHO, 2016). Moreover, this health risk possesses particularly high relevance for young people (Centers for Disease Control and Prevention, 2014). Therefore, the TV-PSA: “*Non, je ne regrette rien*” from the LOVELIFE campaign by the *Federal Office of Public Health* (Rod Kommunikation, 2014) seemed suitable to be selected as the stimulus. The spot shows individuals – varying in gender, age, and sexual orientation – in different intimate situations followed by information about the personal risk of contracting STDs and a call to use condoms. In the original spot, the song “*Non, je ne regrette rien*” by Edith Piaf (Vaucaire & Dumont 1961) is used as background music. The mismatch between the sensual pictures (sexual intercourse in various manners as well as references to certain sexual practices [e.g., fetishes] and preferences [e.g., heterosexual and homosexual men and women]) and the music already gives the original version of the spot a humorous character by eliciting comic wit (Speck, 1991). Here, the use of humor can be seen as a strategy to overcome the otherwise impairing negative effects of potentially shame-inducing health issues on message processing (Yoon, 2015). The great advantage of the original scenes was their inherent ambiguity: on the one hand, they could be interpreted as amusing and carnivalesque, but on the other hand, they were susceptible to being interpreted as sinister. Based on that material, manipulation of the spot with respect to humor and threat was implemented

4 About 36.9 million people were living with HIV at the end of 2016. Globally, 1.8 million people became infected with the virus in in the same year.

by changing the original background music⁵ and editing formal image parameters (e.g., saturation, color, and brightness; see Appendix A)⁶. The humorous version used the song “*I’m Too Sexy*” by Right Said Fred (1992) to indicate a light, fun atmosphere in which the displayed couples enjoy themselves in a sexual manner. For this manipulation, the formal image parameters were altered (e.g., bright colors, higher exposure) to underline the light tonality. The threatening version used the same visuals but introduced “*First Exorcism*” by Alex Heffes (2011) as background music to frame the risk behavior in a threatening manner. The image parameters in this version were altered to emphasize the threat posed by the risk behavior (e.g., dark colors, lower exposure). Music and formal image parameters created a sinister mood as a backdrop to the couples’ interactions so that they could be interpreted as fights, suppression, or even light violence. Following the manipulations, the second part of the spot presented five facts about STDs and the use of condoms as a protective measure from unwanted infections (e.g., ‘The use of condoms provides almost 100% protection from sexually transmitted diseases’), which also highlighted the personal risk to participants of contracting an STD (e.g., ‘Practicing unprotected sex increases the chances of contracting a sexually transmitted disease by approx. 200’). These facts as well as their presentation were held constant in both experimental versions, and neither contained background music nor differed with respect to image parameters. For a schematic illustration of the spot and its contents, see Figure A2–A4 in the additional material. To increase external validity, the spot was integrated as part of a commercial break within a health-related TV show (“Puls” by Schweizer Radio und Fernsehen) that presented a topic which was not related to the spot. The total length of both versions of the show (including the commercial break) was 7 minutes and 37 seconds.

4.3. Measures

Health factors, sexual experience, and prevention behavior. The pre-viewing questionnaire assessed different aspects of participants’ sexual experiences and behaviors to generate control variables. A filter question asked about *sexual experience* (to which 92.5% indicated that they had participated in sexual activity at some point)⁷. If so ($n = 148$), they were asked about different aspects related to their *relationship status* (47.8% were in a relationship at the time of data collection), *sexual or pre-*

5 Several studies – many of which done in advertising research – focus on the role of musical framing on information processing and subsequent effects on behavioral relevant outcomes (for an overview see, e.g., Schramm & Spangardt, 2016). Although the effects of musical framing in the context of persuasive health messages is a relevant and important area of research that merits more attention from scholars, this study did not further elaborate on those effects. The background music of the stimulus material was simply chosen in order to create congruity between this musical background and the content of the visual material. This was important, as a match between these two dimensions has been found to have a promotional effect on message effectiveness (e.g., North, Mackenzie, Law, & Hargreaves, 2004).

6 The spot was chosen because it consists only of visual material (no dialogue). Therefore, manipulation was comparatively easy.

7 Only participants who indicated that they have already had sexual experience were considered for further analysis.

vention behavior (e.g., unprotected sexual encounters), and *prior knowledge about STDs*. The first part of the questionnaire concluded with *demographic measures*, including *age*, *gender*, and *education* (1 = low level of formal education, 6 = high level of formal education). The post-viewing survey consisted of questions that were directly related to the assessment of the PSA and the constructs of the *EPPM*.

Attention. As a measure of cognitive processing, a shortened subscale of the MEC-SP-Questionnaire (originally developed to measure spatial presence) by Hartmann et al. (2016) was used to assess participants' subjective perceived attention to the spot (5-point Likert-type scale; 1 = does not apply at all, 5 = fully applicable), e.g., "I was fully focused on the content of the spot" ($M = 3.84$, $SD = .71$, $\alpha = .82$).

Emotional experience. A modified version of Izards' (1977) *Differential Emotions Scale* (DES; Renaud & Unz, 2006) was used to assess the emotional experience related to the spot (i.e., joy, happiness, or fear) on a 5-point Likert-type scale (1 = not at all, 5 = very strongly). With respect to the emotional framing, the experiences of fear ($M = 1.50$, $SD = 1.00$) and joy ($M = 2.99$, $SD = 1.03$) are of particular relevance to this analysis.

Perceived threat and perceived efficacy. Perceived threat and perceived efficacy were measured based on Witte's (1996) *Risk Behavior Diagnostic Scale* (RBS). Two single items indicated participants' perceived severity of ($M = 4.43$, $SD = 0.61$) and susceptibility to ($M = 2.14$, $SD = 0.53$) STDs (e.g., "What is the probability of you contracting an STD?"). Two additional single items measured their perceptions of self-efficacy ($M = 4.06$, $SD = 0.87$) and response efficacy ($M = 4.78$, $SD = 0.63$) with respect to condom use (e.g., "If I use condoms, I am less likely to contract an STD.") on a 5-point Likert-type scale (1 = strongly disagree, 5 = strongly agree). Respective items were combined to form an index of perceived threat ($M = 3.28$, $SD = 0.40$, $r = 0.63$) and perceived efficacy ($M = 4.42$, $SD = 0.57$, $r = 0.58$).

Message-related cognitions. Tendencies to engage in danger control processes were operationalized by measuring *message judgment*. Participants were asked to assess the PSA on the *Evaluation Judgment Scale* by Burke and Edell (1989), which includes items such as "interesting", "relevant", and "useful" on a 7-point Likert-type scale (1 = strongly disagree, 7 = strongly agree). Items were combined to form an index ($M = 3.83$, $SD = 0.59$, $\alpha = 0.83$) where higher values indicate a more positive message judgment. In order to enable a treatment check, this scale also included two items assessing participants' perception of how threatening ($M = 1.67$, $SD = 1.04$) and amusing ($M = 3.06$, $SD = 1.27$) they found the message. Witte's (1996) RBS, consisting of two 2-item 5-point Likert-type scales (1 = doesn't apply at all; 5 = fully applicable) assessing *issue derogation* (overblown, overstated) and *perceived manipulation* (misleading, distorted), was used to form an index of participants' *reactance* ($M = 2.19$, $SD = 0.71$, $\alpha = 0.71$) towards the message, which is indicative of fear control processes (maladaptive responses).

Attitude, behavioral intention, and information seeking. The *attitude* towards using condoms during sexual encounters was assessed using six items on a 5-point Likert-type scale (1 = does not apply at all, 5 = fully applicable) based on the *Theory of Planned Behavior* (Ajzen, 1991), e.g., good, positive, useful, etc. The items were combined to form a single-factor index ($M = 3.74$, $SD = 0.58$, $\alpha = 0.76$). *Intention* to use condoms in the future was measured with a single item on

Table 1. Means, standard deviations, Pearson zero-order correlations, and internal consistencies / correlations

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12
1 Fear (Spot) ^a	1.67	1.04	–											
2 Joy (Spot) ^a	3.06	1.27	–.21**	–										
3 Perceived threat (STD)	3.28	.40	–.06	.11	(.63 ^b)									
4 Perceived efficacy (STD)	4.42	.57	–.25**	.12	.20* (.58 ^b)									
5 Reactance	2.19	.71	.36**	–.01	–.04	–.17 (.70)								
6 Message judgment	3.83	.59	–.35**	.25**	.14	.17*	–.57 (.83)							
7 Attitude	3.74	.58	–.17*	.20*	.08	.19*	–.44**	.58** (.76)						
8 Intention ^a	3.77	1.26	–.08	.08	.10	.08	–.14	–.01	.13	–				
<i>Covariates</i>														
9 Gender ^{c,d}	.57	.57	–.05	–.10	.06	.09	–.16*	.08	.04	–.06	–			
10 Relationship status ^{d,e}	.52	.50	–.07	.00	–.04	–.12	–.09	.01	.15	.38**	–.10	–		
11 Prior knowledge STDs ^a	3.23	.61	–.02	–.04	.05	–.09	.33**	–.18*	–.18	.08	–.02	–.08	–	
12 Attention	3.84	.71	.09	.09	.15*	.16*	–.14	.36**	.33**	–.02	.06	–.15	–.13	(.82)

Note. *n* = 160; matrix diagonal (in parentheses); Cronbach's alpha; *M* = mean; *SD* = standard deviation; ^asingle-items; ^bcorrelations; ^cdummy-coded (0 = male, 1 = female); ^dSpearman Rho correlations; ^edummy-coded (0 = in a relationship, 1 = single).
p* < .05, *p* < .01.

a 5-point Likert-type scale (“I intend to use condoms in the future”) ranging from 1 (does not apply at all) to 5 (fully applicable), hence higher numbers indicate a greater intention to use condoms ($M = 3.77$, $SD = 1.26$).

4.4. Manipulation check

In order to validate the successful manipulation of emotional framing (threat vs. humor) in the PSA leading to emotional experiences of fear and joy, respectively, independent sample t-tests were conducted. Both the threatening (t) and the humorous (h) version of the spot were also perceived as such. While the threat manipulation was perceived as more threatening ($M = 2.01$, $SD = 1.25$; $M = 1.36$, $SD = 0.67$; $t(158) = -4.17$, $p < .001$), the humorous manipulation was perceived as more humorous ($M = 2.57$, $SD = 1.18$; $M = 3.51$, $SD = 1.19$; $t(158) = 5.05$, $p < .001$). Subsequently, both spots evoked different degrees of fear ($M = 1.96$, $SD = 1.22$; $M = 1.38$, $SD = 0.73$; $t(158) = -3.70$, $p < .001$) and joy ($M = 2.59$, $SD = 1.05$; $M = 3.25$, $SD = 0.94$; $t(158) = 4.20$, $p < .001$).

Thus, both versions successfully resulted in significantly different emotional experiences in accordance with the intended framing. Before conducting multivariate tests, zero-order correlations were calculated (see Table 1). The general pattern of those correlations offers a first insight into the basic relationships and sustains the notion of existing relationships between the investigated variables.

Table 2. Summary of hierarchical regression analysis predicting perceived efficacy

	<i>B</i>	<i>SE</i>	β	ΔR^2
<i>Model 1</i>				.04
Sex	.06	.09	.05	
Relationship status	-.09	.10	-.08	
Prior knowledge	-.08	.08	-.08	
Attention	.10	.07	.13	
<i>Model 2</i>				.08**
Sex	.06	.09	.05	
Single	-.11	.09	-.10	
Prior knowledge	-.08	.08	-.09	
Attention	.11	.06	.13	
Emotion: fear	-.13	.04	-.24**	
Emotion: joy	.04	.04	.09	

Note. $R^2_{\text{total}} = .12$, $p = .007$, $n = 148$. Sex (0 = male, 1 = female) and single (0 = in a relationship, 1 = single) were dichotomously coded. All coefficients are from the final model.

** $p < .01$.

5. Results

In order to test the hypotheses regarding the effects of experienced joy and fear on central variables in the *EPPM*, hierarchical regression analyses were carried out to determine the STD-related perceptions of threat and efficacy as well as message judgment, reactance, and attitude⁸. All analyses followed the same pattern. First, the covariates gender, relationship status (single variable, dummy coded), prior knowledge about STDs, and attention to the spot were entered into the analysis. The second block contained the actual emotional experiences⁹ of fear and joy during spot exposure¹⁰. The variance inflation factor (VIF) and tolerance statistic for each model were examined in order to rule out potential problems linked to multicollinearity (Bowerman & O'Connell, 1990; Menard, 1995).

Perceived threat. The model for the effects of the emotional experiences of fear and joy on perceived threat was not significant. These results also confirmed an initial screening of correlational data (Table 1), revealing that there is a significant relationship only between perceived threat on one side and perceived efficacy ($r = 0.20, p = .013$) and attention ($r = 0.15, p = .018$) on the other. Thus, *H1(a)* and *H2(a)* were rejected.

Perceived efficacy. No significant influence of the covariates (sex, relationship status, prior knowledge, and attention) on perceived efficacy could be observed ($F_{\text{change}}(4, 143) = 1.49, p = .207$). Fearful ($\beta = -0.24, p = .003$) emotional experiences resulted in a significant change in explained variance of the dependent variable ($F_{\text{change}}(6, 141) = 3.09, p = .003$), namely, $R^2 = 0.12$. As a result, experiencing fear significantly *reduced* the perception of efficacy, while joy did not have the assumed efficacy-boosting effect. These results provide evidence for *H1(b)* but not for *H2(b)* (see Table 2).

Message judgment. The covariates in Model 1 significantly contributed to message judgment ($F_{\text{change}}(4, 143) = 8.47, p < .001$). Being single ($\beta = 0.13, p = .043$) and having higher reported attention towards the spot ($\beta = 0.39, p < .001$) improved the evaluation of the message. Introducing the experience of fear and joy significantly improved the model ($F_{\text{change}}(6, 141) = 14.78, p < .001$). Together, the predictors accounted for 33.2% of the variance of the dependent variable (an additional 14.0% compared to the first step). In accordance with *H3(a)*, the experience of fear downgraded message judgment ($\beta = -0.34, p < .001$), whereas a strong tendency for the enhancing effect of joy on message judgment was found ($\beta = 0.11, p = .064$) (*H4(a)*). Moreover, attention (which had already been shown to be a significant predictor in Model 1) emerged as a considerable factor ($\beta = 0.39, p <$

8 Indicators under consideration were gender, relationship status, prior knowledge about STDs, and attention paid to the PSA spot. Other indicators were considered but not included for reasons of either lacking variance (i.e., age, education, sexual orientation, or past experiences with STDs) or being strongly influenced by relationship status, which was already included in the analysis (i.e., number of sexual encounters within the last twelve months or the use of condoms).

9 Accounting for individuals' actual emotional experiences in analyzing message effects has been discussed as a promising alternative to conventional group comparisons (O'Keefe, 2003; Nabi, 2016).

10 See Table 2 for an exemplary presentation of the results for perceived efficacy. The key findings of the remaining analyses will be described in written form.

.001) in improving message judgment. Finally, prior knowledge about STDs also had a significantly negative influence on message judgment ($\beta = -0.12, p = .044$).

Reactance. Model 1 indicated that the covariates contributed significantly to explaining reactance ($F_{\text{change}}(4, 143) = 7.87, p < .001$). More precisely, women (sex: $\beta = -0.15, p = .022$) and singles ($\beta = -0.13, p = .045$) were less reactant, whereas higher levels of prior knowledge about STDs resulted in more reactance towards the recommendations presented in the spot ($\beta = 0.30, p < .001$). Counting in fear and joy significantly improved the model, now explaining 29% of the variance ($F_{\text{change}}(6, 141) = 9.41, p < .001$). This confirmed $H3(b)$, showing that the experience of negative emotions substantially increased reactance ($\beta = 0.33, p < .001$). Contradicting the assumptions, the same effect was found for positive emotional experiences ($\beta = 0.12, p = .049$): thus $H4(b)$ was rejected.

Attitude. With respect to attitude, the covariates significantly contributed to explaining variance in Model 1 ($F_{\text{change}}(4, 143) = 8.10, p < .001$). By adding fear ($\beta = -0.15, p = .029$) and joy ($\beta = 0.12, p = .063$), an additional 4.4% of variation in attitude could be explained ($F_{\text{change}}(6, 141) = 3.99, p = .021$). Both being single ($\beta = 0.21, p = .004$) and paying attention to the spot ($\beta = 0.36, p < .001$) resulted in a more positive attitude towards condom use. Altogether, the model explained 22.8% of variance. While fear ($\beta = -0.15, p = .029$) impairs favorable attitudes towards the use of condoms, there were strong indications of the beneficial effects of experiencing joy ($\beta = 0.12, p = .063$). Therefore, $H5(a)$ was partially supported.

Intention. The last model investigates participants' intention to use condoms. Only the covariates in Model 1 explained a significant proportion of variance (12.8%; $F_{\text{change}}(4, 143) = 6.07, p < .001$). More precisely, being single had a positive effect on the intention to use condoms in the future ($\beta = 0.37, p < .001$). The introduction of emotional experience did not improve the model ($F_{\text{change}}(6, 141) = 1.28, p = .282$). Neither joy ($\beta = 0.09, p = .146$) nor fear ($\beta = -0.07, p = .178$) were of any relevance to these intentions. Therefore, $H5(b)$ was rejected.

Comparing the effects of positive and negative emotional experiences. The correlational analysis (Table 1) already indicated that experiencing fear significantly affects perceptions of efficacy and reactance tendencies, whereas joy does not. This pattern was also confirmed in the regression analysis. Whereas the experience of joy significantly influenced reactance ($\beta = 0.12, p = .049$) despite slightly missing significance for message judgment ($\beta = 0.11, p = .064$) and attitude ($\beta = 0.12, p = .063$), the experience of fear negatively influenced perceived efficacy ($\beta = -0.24, p = .002$), message judgment ($\beta = -0.34, p < .001$), and attitudes ($\beta = -0.15, p = .029$), while it increased reactance ($\beta = 0.33, p < .001$). Thus, it seems that a positive emotional framing of a health-risk behavior might be better suited to promoting healthy behavior than utilizing threatening cues – at least for a younger audience and against the background of STDs (RQ).

6. Discussion

This research compared the effect of positive vs. negative emotional framing of persuasive messages about health risks against the theoretical background of the *EPPM* (Witte, 1992). As the *EPPM* was introduced and traditionally used to exp-

lain the effects of fear-evoking appeals, one goal of this study was to compare the effects of negatively framed messages to positively framed messages evoking joy. Theory suggested that humorous messages can foster positive experiences, which in turn act as a kind of buffer that mitigates the negative effects of persuasive messages about health risks (Alden et al., 2000). Hence, this study aimed to demonstrate the potential of the *EPPM* and related central components to investigate positively framed health messages. The data revealed that a positive emotional experience (joy) following a humorously framed PSA about a health risk did not affect individuals' perceptions of threat and efficacy. In contrast, the conventional threatening and fear-inducing framing heightened perceptions of threat and decreased efficacy perceptions. Moreover, the experience of fear and joy further impacts message-related cognitions as well as behavior-relevant factors. Whereas fear increases reactance and impairs message judgment, joy seems to operate diametrically. The same holds true with regard to effects of both emotional experiences on participants' attitudes towards the use of condoms. Whereas fear impairs favorable attitudes, there is a strong tendency for experienced joy to improve the desired attitude towards using condoms. In summary, a fear-arousing frame involves the danger of producing unwanted fear-control responses that can lead to subsequent maladaptive behavior. These findings are consistent with previous research (Ort & Fahr, 2018; Ruiter et al., 2014; Tannenbaum et al., 2015; Witte & Allen, 2000) and speak against the imprudent use of such appeals. In contrast, a positive emotional frame (e.g., via humor) induced joy, which had beneficial effects. That is why such positive approaches should at least be considered as alternatives to conventional strategies. This adds to the findings of Blanc and Brigaud (2014) who found that humorous health ads received prolonged attention and were judged to be more convincing. Intriguingly, both negative and positive emotional experiences stimulated reactance towards the message, although fear did this to a higher extent than joy. One explanation for this effect is that both versions of the stimulus were perceived as being persuasive, which might have triggered reactance responses of participants towards such appeals (Dillard & Shen, 2005). In other words, the use of humor in persuasive communication can reduce the reactance towards such messages.

Participants' reported attention towards the spot emerged as a potentially relevant factor for message processing and health-relevant outcomes as it was positively related to participants' evaluation of the message as well as their attitudes towards using condoms. This effect has also been reported in previous studies regarding the processing of emotional (Yiend, 2010) or health-related (Donohew, Palmgreen, & Lorch, 1994) information. Campaign planners might therefore be well advised to make sure that people see their message in an environment that offers little potential for distraction or to design their message in a way that attracts the audience's attention. However, and on a related note, results contradict the conventionally discussed effect of attention in persuasion research, in particular the *Elaboration Likelihood Model* (ELM; Petty & Cacioppo, 1986). It is usually assumed, that central processing of a message – in this study indicated by attention – increases the chance of counterarguing and more pronounced reactance towards the message. One explanation for this contradictory finding could be related to the content of the spots and their generally rather captivating visual impressions.

Another potentially influential variable giving cause for further discussion was participants' prior knowledge about STDs. This factor was positively related to reactance and negatively related to message judgment. This indicates that a persuasive message might be less effective for people who are already well informed about a topic. Knowledge, in these cases, can function as a kind of filter that potentially could inhibit further message processing. One explanation for this effect can also be found in the literature on the *ELM* (Petty & Cacioppo, 1986), which postulates that distinct knowledge can promote information processing through the central route. Information processed on this route runs a higher risk of leading to counterarguing and rejection of the message if the persuasive intent of the message is revealed. This means that campaign planners should be aware that their envisioned target group might already have more or less extensive knowledge (e.g., due to priorly being exposed to respective information) and thus will not appreciate being repeatedly lectured. Therefore, both prior knowledge and paid attention are useful variables to be controlled as individual and situational factors in research.

Another factor that has not been directly addressed in this study is that a humorous presentation of potentially sensitive or embarrassing topics (in this study STDs) could be advantageous for overcoming personal inhibitions that prevent people from seeking advice or talking about the issue, e.g., with sexual partners. Therefore, it seems important for future studies to look at aspects of interpersonal communication following the exposure to such information.

On a methodological note, this study shows that emotional experiences should be considered as crucial predictors for future studies as they offer the potential for providing a better understanding of the underlying mechanisms of message processing than do group comparisons. Data revealed that the dichotomized stimulus-variable (fear/joy) only correlated with message judgment ($r = -0.32$, $p < .001$) and intention ($r = 0.37$, $p < .001$), whereas the actual emotional experience was significantly related to several other central variables of the underlying theoretical model (see Table 1). These findings are in accordance with developments and previous findings (Breitsohl, 2018; Choi, Cameron, & Leshner, 2006; Lewis, Watson, White, & Tay, 2007). Thus, the call to investigate the actual emotional experiences rather than (just) using group comparisons in health communication research (O'Keefe, 2003; Nabi, 2016) is further sustained. Thereby this study contributes to a more nuanced picture of the effect of emotional appeals, especially with regard to emotions other than fear.

There are limitations and shortcomings of this study that need to be addressed. The results indicate that a pronounced threat in a message leads to the experience of fear and does not have beneficial outcomes. Therefore, applying such measures may not be advisable for persuasive messages about this health risk for comparable target groups (here, young and formally educated). Despite the results of this study, it is important to note that past research has indeed found evidence for the beneficial effects of threatening appeals (e.g., message acceptance or adaptive behavior changes). This especially holds true when such appeals are combined with high efficacy cues that relate to the threat (Ruiter et al., 2014; Tannenbaum et al., 2015; Witte & Allen, 2000). As efficacy cues were not manipulated in this study,

it is not possible to derive respective conclusions or recommendations. Considering health communication practices, it might be useful to use a threat that triggers fear at the onset of communicative measures to attract attention as well as raise individuals' perception of susceptibility and severity. Subsequently, information concerning self-efficacy and response efficacy should be wrapped in appeals or cues that evoke positive emotional experiences such as joy and pride. Hence, the conventional way of approaching health-risk communication solely by appealing to negative or deterring emotions might be myopic.

On a related note, the findings of this study are also limited in their generalizability with respect to the emotions investigated, i.e., fear and joy. Persuasive health communication also draws on the effects of a variety of other emotions, e.g., shame, guilt (Duhachek, Agrawal, & Han, 2012; Yoon, 2015) and disgust (Clayton, Leshner, Bolls, & Thorson, 2016). In order to develop a more comprehensive understanding of the effects of emotional appeals, more research investigating, and especially comparing, the effectiveness of other emotions is required.

Future research should also be aware of the possible influences of other contextual or individual factors that may influence the observed relationships and effects. As participants of this study already seemed to be very well informed about STDs and the use of condoms, one might question the topics' relevance for them. Nevertheless, almost two-thirds of participants (64.2%) still reported a need for further information about STDs. With respect to the sample in general, it is also necessary to admit the limited generalizability of the findings to a broader population.

One reason for the rather weak effects of joy – despite most of them pointing towards the proposed direction – could be due to its rather low intensity ($M = 3.06$; $SD = 1.27$ – on a scale between 1 and 5). Although participants indicated even lower levels of fear ($M = 1.67$; $SD = 1.04$), it might be necessary to evoke stronger positive emotional experiences in order to be able to prove corresponding effects. As the intensity of emotional experience plays an important role in the processing of accompanying information (Yiend, 2010), the positive stimulus may have been too weak to provoke sufficient levels of positive emotional response. The high external validity of this design gained by incorporating the PSA within a commercial break on a television program and the sensitive manipulation of the independent characteristics might attenuate the effect of positive emotional experiences. On a related note, the presentation of risks together with positive emotional appeals necessitates careful consideration of the fact that people probably do not often experience pure joy, happiness, or love, but rather a blend of different positive and negative emotions. For example, a person can feel sad and happy (referred to as melancholy) or experience joy and guilt (referred to as glee) at the same time or successively in a short time. Participants in our study might have experienced a blended feeling of joy and embarrassment (caused by how the subject, STDs, was communicated). This kind of mixed emotion¹¹ or the emotional flow (Nabi, 2015) throughout the exposure to health information may lead to a

11 By mixing two or more emotions (e.g., happiness and sadness or fear and disgust) at different intensities, it is possible to create a variety of emotional states.

particular way of processing a health message, which also calls for a closer examination of the characteristics and effects of such mixed emotions and the evolution of emotional experiences.

More importantly, perception of humor is highly individual and is affected by different factors. For example, studies suggest that the effect of humorous cues depends greatly on which aspect of the message is targeted and what kind of humor is applied. Moreover, the effects of humor very much depend on certain variables such as characteristics of the target group, topic, media channel, and source (Schwarz & Reifegerste, 2017). Another difficulty is that humor can easily be misinterpreted or perceived as offensive and therefore backfire (Lee, Slater, & Tchernev, 2015; Martin, 2010). With regard to this, it is necessary to verify the observed effects of this research with different kinds of humor, other topics, and other types of positive emotional framing (e.g., pride, contentment) against the background and implications of their different core relational themes (e.g., Lazarus, 1991; Campos, Shiota, Keltner, Gonzaga, & Goetz, 2013). This should be done to avoid embarrassment and other possible negative effects of humor. Beyond this, as exposure to and processing of health information seems to be not only influenced by individual, situational, and message-related factors, but also by social and cultural norms, it seems likely that research on humor conducted within other social and cultural contexts may produce different results.

7. Conclusion

This research contributes to the clarification of the effects of positively (humorous) vs. negatively (threatening) framed risk-behaviors – labelled as emotional framing – in persuasive messages about STDs by comparing their effectiveness as well as their potential to benefit and/or inhibit message processing and health-related outcomes. By investigating and utilizing a model that was originally developed to examine appeals to fear (EPPM), this study lays the groundwork for ongoing comparative research in comparing positively and negatively framed health messages. In particular, it should be considered that health communication very rarely makes isolated appeals to fear. Often, self-efficacy and response-efficacy are also addressed in communicative measures, such as PSAs. It is therefore worthwhile to investigate which message components should be wrapped and how, in mediated communication and how they interact with the initially communicated risk.

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Appendix – Stimuli

Figure A1. Schematic overview of the proposed hypotheses

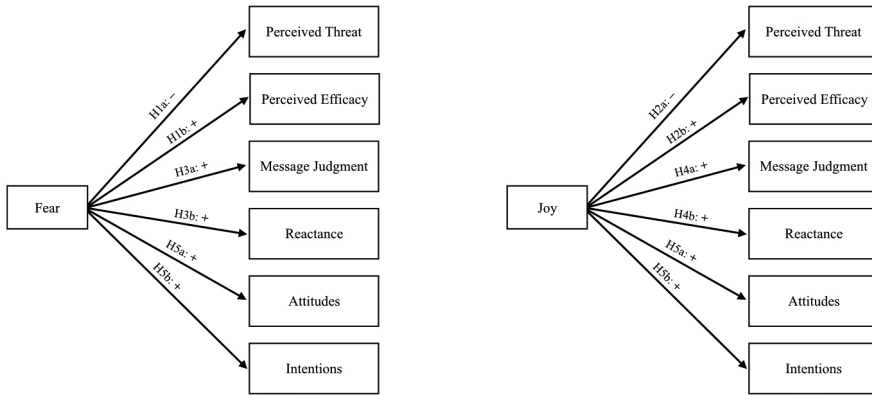


Figure A2. Example of the presented video – positive (joy) condition (screenshots)



Figure A3. Example of the presented video – negative (fear) condition (screenshots)

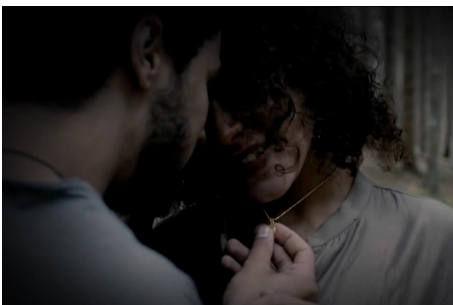
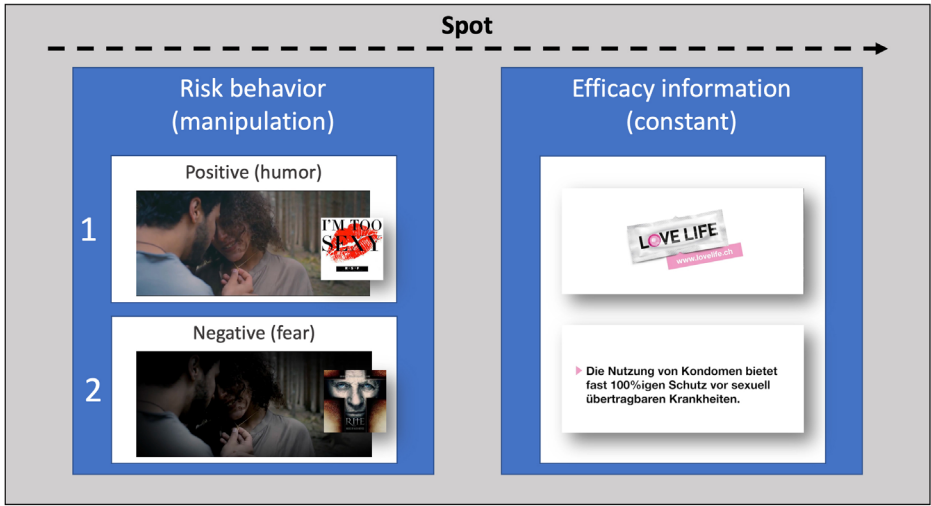


Figure A4. Schematic representation of the presented video – positive and negative condition



Note. Efficacy information (held constant in both versions of the stimulus) included facts about the risk of STDs and the use of condoms as a protective measure from unwanted infections (e.g., ‘The use of condoms provides almost 100% protection from sexually transmitted diseases’ and ‘Practicing unprotected sex increases the chances of contracting a sexually transmitted disease by approx. 200’).

Table 3. Summary of hierarchical regression analysis

Variable	Perceived efficacy	Reactance	Message judgment	Attitude	Intention
R^2 Model 1	.04	.18***	.19***	.19***	.15***
ΔR^2 Model 2	.08**	.11***	.14***	.04*	.02
R^2 Total	.12**	.29***	.33***	.23***	.16***

Note. Model 1: Sex, Single, prior knowledge, Attention; Model 2: Model 1 & Emotion: threatening, Emotion humorous. Sex (0 = male, 1 = female) and single (0 = in a relationship, 1 = single) were dichotomously coded.
* $p < .05$. ** $p < .01$. *** $p < .001$.