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Information Targeting Increases the Weight of Stigma: Leveraging Relevance Backfires When People Feel Judged

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ABSTRACT

Although relevance is viewed as a panacea for persuasion, there may be contexts in which attempts to leverage relevance backfire. Across two experiments, we investigated conditions under which signaling personal relevance, via targeting information to audiences based on identities, backfires. In particular, we assessed how activation of personal characteristics (e.g., identities, health goals, and both identities and goals), as well as context cues (e.g., time of year), impact persuasion. Because people with higher body mass indexes (BMIs) are frequently targets of weight stigma, particularly within health contexts, we expected that perceiving relevance based on weight identities would elicit identity threat and subsequently inhibit persuasion for people with higher, versus lower, BMIs. Across studies, participants were told they received information about obesity due to chance (control condition), or after providing their demographics (e.g., weight status; Studies 1–2), health goals (Study 2), or demographics and goals (Study 2). Findings revealed that, particularly for participants with higher BMIs, being targeted to receive information about obesity and obesity-related illness increased perceived relevance among recipients, which predicted increases in irritation and self-conscious emotions. Negative emotional responding produced heterogenous, but primarily deleterious, effects on self-efficacy and behavioral intentions to engage in healthy behavior because recipients felt unfairly judged (Study 2). Study 2 determined that targeting on goals and changes in context (e.g., stronger beliefs that change is possible at New Year's) decreased the link between perceived relevance and feeling judged. Collectively, this work shows that leveraging message relevance may inhibit persuasion for target audiences when they feel unfairly judged.

1. Introduction

What makes target audiences pay attention to messages? Although many strategies have been proposed, one of the most ubiquitous techniques is to make the message germane to recipients. Indeed, the use of personal relevance to increase message efficacy has been documented in fear appeals, identity-based interventions, Gricean conversational norms, and public health appeals designed to encourage high-risk audiences to engage in target behavior (Berger & Rand, 2008; Grice, 1975; Kreuter et al., 2005; Witte & Allen, 2000). Although relevance is generally viewed as a panacea for increasing message receptivity, there may be circumstances under which leveraging personal relevance backfires. Furthermore, additional factors, such as context cues, may moderate the impact of relevance on message processing. Given that theory highlighting the benefits of relevance is frequently used as the basis for real-world interventions (Kreuter & Wray, 2003; Maibach & Parrott, 1995), it is critical to identify the conditions under which increasing relevance may produce negative outcomes. Boundary testing also enriches theory development by more clearly delineating the role of relevance in persuasion.

The current studies examine the impact of leveraging relevance based on social identities for people who are often the recipients of persuasive attempts designed to motivate behavior change: people with higher body weights (Puhl, Peterson, & Luedicke, 2013). Because people with higher weights frequently experience weight stigma, disseminating information that encourages healthy lifestyle changes on the basis of weight identities may backfire due to social identity threat (Hunger, Major, Blodorn, & Miller, 2015; Steele, Spencer, & Aronson, 2002). However, disseminating information based on other personal characteristics (e.g., goals) or in different contexts (e.g., New Year's) may mitigate the consequences associated with perceiving identity-based relevance due to differences in how people interpret what relevance means. In other words, although people's responses to increased relevance have important implications for health and behavioral outcomes, it is just as important to understand how people interpret what relevance means.

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1.1. The benefits of relevance

Relevance is associated with increased persuasion, greater approach behavior to health goals, and increased uptake of target behaviors (Kroeze, Werkman, & Brug, 2006; Petty & Cacioppo, 1986; Skinner, Campbell, Rimer, Curry, & Prochaska, 1999). Furthermore, relevance has been proposed as a mechanism to explain why highly personalized communication is more efficacious in motivating behavioral change than non-tailored information (Ko, Campbell, Lewis, Earp, & DeVellis, 2011; Kreuter & Wray, 2003). Beneficial outcomes may emerge, in part, because perceiving relevance (a) allows for greater conservation of attentional resources by directing attention to self-relevant stimuli, and (b) strengthens motivation to actively process information (Bargh, 1982; Petty & Cacioppo, 1984; Petty & Cacioppo, 1986; Petty, Cacioppo, & Goldman, 1981). More elaborative information processing, in turn, increases learning and recall (Carpenter, 1988; Petty & Cacioppo, 1986; Roser, 1990).

Message relevance has been operationalized in many ways, such as (a) including information about the recipient's personal behavior (Kreuter & Wray, 2003), (b) integrating target audiences' cultural values (Kreuter et al., 2005), or (c) using images that reflect the target audience (Houts, Doak, Doak, & Loscalzo, 2006). The efficacy of these strategies has been demonstrated empirically across a variety of health domains, including cancer, weight loss, smoking, and caffeine intake: highly personalized (versus non-personalized) information is perceived to be more relevant, and is more likely to be read, remembered, discussed with others, viewed as more interesting, and to increase behavior uptake (Brug, Steenhuis, van Assema, & de Vries, 1996; Kreuter, Bull, Clark, & Oswald, 1999; Nooijer, Lechner, Candel, & de Vries, 2004; Resnicow et al., 2009; Skinner, Strecher, & Hospers, 1994; Van Weert et al., 2011; Webb, Simmons, & Brandon, 2005).

1.2. Is relevance always beneficial?

Literature on fear appeals suggests that leveraging relevance to increase threat has mixed efficacy. Although relevance in the context of threat may increase perceptions of susceptibility that motivates action (Becker, 1974; Tannenbaum et al., 2015; Witte & Allen, 2000), it can also elicit defensive processing of messages, including counterarguing, ignoring the message, or derogating the source (Earl & Albarracín, 2007; Earl, Nisson, & Albarracín, 2015; Kessels, Ruiter, Wouters, & Jansma, 2014; Sherman, Nelson, & Steele, 2000; Tannenbaum, Macauley, & Norris, 1966).

In the context of threat, increased relevance may backfire for several reasons. Exposure to threatening communication may be dissonant to one's sense of self, subsequently eliciting defensive processing to maintain one's self-perceptions or reject undesirable conclusions (Aronson, Fried, & Stone, 1991; Chaiken, Liberman, & Eagly, 1989; Festinger, 1957; Liberman & Chaiken, 1992). Moreover, relevance may elicit social identity threat, and subsequent defensive processing, if information makes people feel threatened, devalued, or judged on the basis of their group membership (Branscombe, Ellemers, Spears, & Doosje, 1999; Steele et al., 2002). Members of marginalized social groups are more susceptible to social identity threat, in part, because of experiencing, suspecting, or anticipating being stereotyped or discriminated against due to their group status (Major & O'Brien, 2005). Identity threat is particularly likely to emerge when people lack the resources to cope with a stigma-relevant stressor, and consequently, may elicit a broad range of physiological, psychological, and behavioral responses, such as increased blood pressure, anxiety, worse mental health, greater stress reactivity and elevated cortisol, ego depletion, and greater engagement in high-risk behaviors (Blascovich, Spencer, Quinn, & Steele, 2001; Dietz-Uhler, 1999; Page-Gould, Mendoza-Denton, & Tropp, 2008; Puhl, Peterson, et al., 2013; Tajfel & Turner, 1986).

Given the differential exposure and sensitivity to stigma cues, responses to relevance may vary as a function of social identities, such as weight status. People with overweight or obesity often experience weight-based identity threat in response to behaviors (e.g., disparaging jokes) or environmental barriers (e.g., ill-fitting medical equipment) that evoke stigma about weight status (Friedman, Ashmore, & Applegate, 2008; Puhl et al., 2015; Ruggs, King, Hebl, & Fitzsimmons, 2010). Because discrimination against people with higher (versus lower) body weights is ubiquitious, worry about being stereotyped or viewed negatively as a function of weight status can produce worse physical and psychological health by increasing physiological stress and cortisol secretion, which in turn can decrease self-regulation and increase compensatory behaviors (e.g., stress-induced eating; Ferrante et al., 2016; Hunger & Major, 2015; Hunger et al., 2015; Major, Eliezer, & Rieck, 2012; Major, Hunger, Bunyan, & Miller, 2014; Puhl & Brownell, 2001; Roehling, Pichler, & Bruce, 2013; Rudolph, Wells, Weller, & Baltes, 2009; Shapiro & Neuberg, 2007; Tomiyama, 2014; Tomiyama et al., 2014).

Stigmatizing portrayals of people with obesity can be particularly problematic in health communications designed to encourage lifestyle change (Bayer, 2008). People who are exposed to identity-threatening (versus control) health promotion messages report decreased motivation to engage in physical activity, perceive less self-control over eating, and consume more calories (particularly for unhealthy, high-sugar foods; Brochu & Dovidio, 2014; Major et al., 2014; Puhl, Luedicke, & Peterson, 2013; Schvey, Puhl, & Brownell, 2011; Tomiyama & Mann, 2013). Thus, the consequences associated with leveraging identity-based relevance may be exacerbated for people who are most susceptible to identity threat, in this case people with higher (versus lower) body weights.

1.3. Making sense of relevance: how attributions about message relevance can increase or decrease social identity threat

Prior work suggests that increasing relevance can be both beneficial and harmful for behavior uptake. Perhaps the way to reconcile these seemingly disparate findings is to consider not just whether increasing relevance is good or bad, but how participants make sense of what increased relevance means. In the context of threat, attribution patterns are particularly important due to their influence on the ways in which people interpret and subsequently respond to events; in response to negative events (e.g., receiving negative feedback), making attributions to external, situational factors (e.g., the blatant prejudice of an evaluator) can protect one's self-esteem, whereas making internal attributions to the self (e.g., my weight) can threaten one's self-esteem and elicit negative outcomes (Crocker & Major, 1989; Major, Quinton, & McCoy, 2002; Major, Quinton, & Schmader, 2003).

Because relevance can be operationalized in many ways, explanations for why messages are relevant can directly influence whether the message elicits threat and how recipients respond to the message. Given that people who share social identities frequently have similar experiences that shape how they perceive their environments, the types of attributions that people make for events may fall along identity-based lines, particularly when an event's cause is ambiguous (London, Downey, Romero-Canyas, Rattan, & Tyson, 2012; Major & Crocker, 1993; Mendoza-Denton, Downey, Purdie, Davis, & Pietrzak, 2002). For instance, attribution patterns can be driven by differential sensitivity to stigma cues, which can vary across social identities (Chan & Mendoza-Denton, 2008; Mendoza-Denton et al., 2002); compared to women with average weight, women with overweight who experienced rejection from an attractive male evaluator were more likely to attribute the feedback to their weight and not blame the evaluator for his reaction, which subsequently predicted a more negative mood (Crocker, Cornwell, & Major, 1993).

Although the extent to which an event is perceived to be threatening may vary as a function of social identities, it is also important to understand how context impacts this relationship. Because identities are dynamic and situated in context, physical and/or psychological states

can activate particular aspects of people's identities that influence how they approach or respond to events (Lewis Jr. & Oyserman, 2016; Oyserman et al., 2017; Oyserman, Fryberg, & Yoder, 2007). Although some contexts can heighten identity threat (e.g., by activating negative stereotypes), context may also mitigate identity threat (e.g., by signaling safety; Davies, Spencer, & Steele, 2005; Purdie-Vaughns, Steele, Davies, Ditlmann, & Crosby, 2008).

In non-threatening contexts, leveraging identities to signal relevance may improve message receptivity; for instance, increasing the salience of a student, versus an American, identity increased the perceived relevance of information about comprehensive exams, facilitating deeper processing (Fazio, 1990; Maitner, Mackie, Claypool, & Crisp, 2010). However, leveraging identity-based relevance in threatening contexts can produce iatrogenic effects (Branscombe et al., 1999; Earl, Crause, Vaid, & Abarracin, 2016; Major et al., 2014; Steele et al., 2002). For instance, linking racial identity to disparities in colorectal cancer produced negative reactions among Black adults (e.g., greater anger about their portrayal; Landrine & Corral, 2014). Given the impact that contextual factors may have on identities, shifts in context may modulate the relationship between perceived identity-based relevance and behavioral outcomes.

1.4. Emotional responses to threatening communication

The extent to which relevance facilitates or inhibits behavior uptake may be explained, in part, by emotional responses. For instance, self-conscious emotions, such as shame or embarrassment, are frequently experienced when people violate important social standards (Tracy, Robins, & Tangney, 2007), and have been linked with avoidance of stigmatizing messages (Earl et al., 2015). Receiving threatening information may also elicit irritation, the emotional experience underlying reactance. Reactance emerges when people perceive a threat to their personal freedom, and to reestablish freedom, people exhibit motivation to engage in behavior counter to what is being advocated by the messages; for instance, following exposure to anti-smoking messages, adolescents report stronger intentions to try cigarettes (Brehm, 1966; Brehm & Brehm, 1981; Grandpre, Alvaro, Burgoon, Miller, & Hall, 2003). As such, experiencing negative affect in response to threatening communication may elicit avoidance, rather than approach, behaviors.

1.5. Signaling relevance of health information: information targeting

Information targeting is a healthcare strategy designed to increase information accessibility and motivate behavioral change by disseminating information specifically to high-risk audiences. In this case, high-risk characteristics can be based on demographics, behavior, or biological factors (King, Ahn, Atienza, & Kraemer, 2008). The efficacy of targeting as an intervention strategy rests on the assumption that the information will be perceived as relevant by recipients, and subsequently, afford the benefits of message relevance (Kreuter & Wray, 2003). However, the efficacy of targeting may also depend on how participants make sense of increased relevance. Thus, if the dimension on which participants perceive relevance evokes threat, targeting may backfire.

In the current paper, we leverage information targeting to signal relevance based on characteristics such as weight status and/or health goals. We expected that targeting information on the basis of weight identities would backfire because identities do not operate in a vacuum; as such, activation of weight identities may automatically activate stereotypes, beliefs, emotions and experiences (e.g., feeling self-conscious or irritated, being negatively stereotyped) that are associated with that identity (Wheeler & Petty, 2001). Therefore, if people perceive that they received the information due to their weight, targeting may activate weight identity-based networks that subsequently evoke identity threat.

1.6. Overview of studies

In two experiments, we consider how activating dimensions on which information may be relevant, through information targeting, impacts behavioral intentions and self-efficacy, particularly as a function of body mass index (BMI). Specifically, we test the emotional and behavioral consequences of perceiving relevance based on social identities (Studies 1–2), health goals (Study 2) or a combination of social identities and health goals (Study 2). Furthermore, Study 2 examines how changes in context, such as the New Year's holiday, impacts responses to identity-based relevance.

We hypothesized that exposure to the targeting manipulation would increase perceived relevance, which was operationalized as the likelihood of attributing receipt of the information to the self (Hypothesis 1a). Because having a marginalized identity can increase sensitivity to stigma cues (Mendoza-Denton et al., 2002), we expected that the effect of targeting on self-attributions would be moderated by participants' BMI, such that participants with higher (versus lower) BMIs would report stronger self-attributions following the targeting manipulation (Hypothesis 1b).

Because leveraging relevance through identities may elicit identity threat, we proposed that perceiving relevance would be associated with negative emotional responses, such as irritation and self-conscious emotions (Hypothesis 2), which would subsequently predict reductions in behavioral intentions and self-efficacy. Moreover, we hypothesized that negative emotional responding would emerge in response to perceived relevance due to perceptions of being unfairly judged (Hypothesis 3). Additionally, we expected that perceiving relevance based on goals (versus identities) would mitigate the consequences associated with perceiving identity-based relevance (Hypothesis 4). Finally, we hypothesized that context changes (e.g., New Year's) would either exacerbate or alleviate the identity threat associated with perceiving identity-based relevance depending on the psychological states that were being activated (Hypothesis 5). For both experiments, we report all measures, manipulations, and data exclusions. Sample sizes were determined before data analysis.

2. Study 1

In Study 1, we manipulated identity-based relevance by targeting information to adults ostensibly based on their weight status. The targeting manipulation was designed to reflect the manner in which people are generally targeted in real-world clinic settings (e.g., medical professionals measure patients' height and weight and, based on their BMI and/or physical appearance, physicians initiate conversations or disseminate information about weight loss or healthy lifestyles to patients).

We hypothesized that people with higher BMIs would be more sensitive to the targeting manipulation because information about obesity is more strongly associated with higher (versus lower) weight identities. Therefore, we expected that participants exposed to the targeting manipulation would be more likely to perceive relevance (e.g., attribute receipt of the information to something about themselves), particularly if they had higher BMIs. Furthermore, we predicted that perceiving identity-based relevance, via targeting, would elicit irritation and self-conscious emotions, and these emotional responses would produce deleterious effects on behavioral intentions and self-efficacy.

Given an extensive body of literature documenting how message framing impacts message processing and subsequent responses to message content (Leader, Weiner, Kelly, Hornik, & Cappella, 2009; Rothman, Salovey, Antone, Keough, & Martin, 1993), Study 1 included two versions of weight-based information (e.g., standard-of-care obesity information versus information designed to be less stigmatizing) to determine whether responses to feeling targeted would generalize across information content. Because we expected that the less

stigmatizing information would alleviate identity threat, we hypothesized that perceiving relevance in response to this information would have a weaker association with negative emotional responses.

2.1. Method

2.1.1. Participants

We sought adequate power to detect small-to-medium effects ($f^2 = 0.085$) for a 2 (Targeting: Targeted, Control) × 2 (Information Type: Standard-of-care obesity, Healthy lifestyle habits) × Continuous (Participant BMI) multiple linear regression design using G*Power (v. 3.1), a power analysis software (Faul, Erdfelder, Lang, & Buchner, 2007). The minimum required sample size to have 0.80 power was 176, and we recruited additional participants given planned data exclusions.

298 U.S. adults completed the experiment using Amazon's Mechanical Turk (Mturk), and participants were compensated $1.50 in exchange for their participation. To measure weight status, participants' BMI was estimated using their self-reported height and weight (obtained at the beginning of the study for participants in the targeting condition, and at the end of the study for participants in the control condition). Because self-reports for height and weight are a common method of assessing weight status and self-reported BMI shows a moderate to high correlation with anthropomorphic BMI measurements, we relied on participants' self-reports for our analyses (Huber, 2007; McAdams, Dam, & Hu, 2007; Pursey, Burrows, Stanwell, & Collins, 2014).

After calculating BMI estimates, participants were excluded at the data analysis stage for three reasons[1]: (a) BMI classification as underweight ($n = 21$), (b) although their BMI was classified as overweight or obese, they self-identified their body type as "athletic" ($n = 5$), and (c) their BMI was greater than three standard deviations above the mean ($n = 5$). After these exclusions, we retained 267 adults (51.3% female; age: 18–71, $M = 34.98$, $SD = 10.58$; 75.3% European American; BMI: 18.65–49.50, $M = 27.62$, $SD = 6.37$). All data were collected before data analysis commenced, and analyses had 80% power to detect an effect size of $f^2 = 0.041$.

2.1.2. Design

A 2 (Targeting: Targeted, Control) × 2 (Information: Standard-of-care obesity, Healthy lifestyle habits) × Continuous (Participant BMI) between-subjects design was used.

2.1.3. Procedure

The online experiment was conducted using Qualtrics (for a study procedure flow chart, see Fig. 1). After providing consent, participants were told the researchers were interested in testing different ways of presenting health information to the general public. *Targeting* was manipulated with instructions explaining why participants were receiving the health information. Participants randomly assigned to the *Targeting* condition reported their demographics (gender, age, height, and weight) at the beginning of the survey and saw the following statement: "Please evaluate the following information, which was selected for you based on a randomly generated computer algorithm" and provided their demographics at the end of the study. All participants reported additional demographic variables, such as their race, education level, and body type (ranging from 1, "very thin", to 5, "very overweight"; 6, "athletic") at the end of the study. Although participants reported their height and weight during the study, they did not receive their BMI value at any point during the experiment.

Following the *Targeting* manipulation, participants read a set of paragraphs, adapted from information found on the CDC and NIH websites, entitled "Obesity" or "Healthy Lifestyle Habits". The paragraphs reflected the type of information a patient might receive from a physician during an office visit. Both sets of paragraphs described ways in which people can become overweight or obese, identified health consequences associated with obesity, and listed healthy behaviors such as exercising, monitoring caloric intake, and eating a healthy diet, that can prevent the development of obesity-related health consequences.

2.1.4. Information content

To manipulate *Information*, we developed two sets of weight-based health information to examine whether the effects of *Targeting* would generalize across information content. Because prior research documents the influence of message framing on receptivity and subsequent behavior (Rothman & Salovey, 1997), the Healthy Lifestyles Habits (HLH) information was based on recommendations identified to improve receptivity to obesity health campaigns (Puhl & Heuer, 2010; Puhl, Luedicke, et al., 2013; Puhl, Peterson, et al., 2013). Although both sets of information encouraged lifestyle and behavior change, the HLH information diverged from the standard-of-care obesity information on several dimensions. The HLH information (a) eliminated use of the word "obesity", (b) identified both naturally occurring (e.g., age) and choice-related factors (e.g., diet) that contribute to weight gain, (c) weakened the implicit and explicit attributions for weight gain to personal responsibility, and (d) contextualized obesity as a common occurrence by providing statistics about the prevalence of obesity in the U.S. population.

2.1.5. Measures

After reading the health information, participants completed survey items about their (a) perceived relevance, operationalized as making self-attributions for receiving the health information, (b) emotional response to the information, (c) intentions to engage in the recommended lifestyle behaviors, and (d) self-efficacy for engaging in the recommended lifestyle behaviors[2].

2.1.5.1. Attributions for receiving the health information. Participants reported their attributions for why they received the health information on one item using a Likert scale ranging from 1, Strongly Disagree, to 5, Strongly Agree ("I received these paragraphs due to something specific about me"). In addition to measuring perceived relevance, this item also served as a manipulation check that the targeting manipulation did, in fact, increase recipients' perceptions that the information was selected for them due to a personal characteristic.

2.1.5.2. Emotional response. Participants reported their feelings of irritation (3 items) and self-conscious emotions (4 items) after reading the information using Likert scales ranging from 1, Strongly Disagree, to 5, Strongly Agree (e.g., "Reading the paragraphs made me feel… irritated; angry; annoyed", $\alpha = 0.92$; "Reading the paragraphs made me … feel embarrassed; feel ashamed; worry about my weight;

[1] We did not have statistical power to detect effects for the sample with an underweight categorization, nor did we have theoretical predictions about how this group would respond to targeted information about obesity. Participants who self-identified as athletic were excluded because their reported BMI did not accurately categorize them, which is a known limitation of using BMI to measure weight. Participants with a BMI > 3 standard deviations above the mean were excluded because these BMI values were generally at or above the 99th BMI percentile. As such, this subset of participants may have different psychological and physical experiences that we expected could impact responses to the targeting manipulation.

[2] We also measured self-reported attention, source evaluations (trust), hypothetical receptivity to physician-provided information, beliefs that weight is caused by personal factors, such as diet and exercise (Study 2) and beliefs that weight is uncontrollable (Study 2). Analyses for these items are reported in the online supplement.

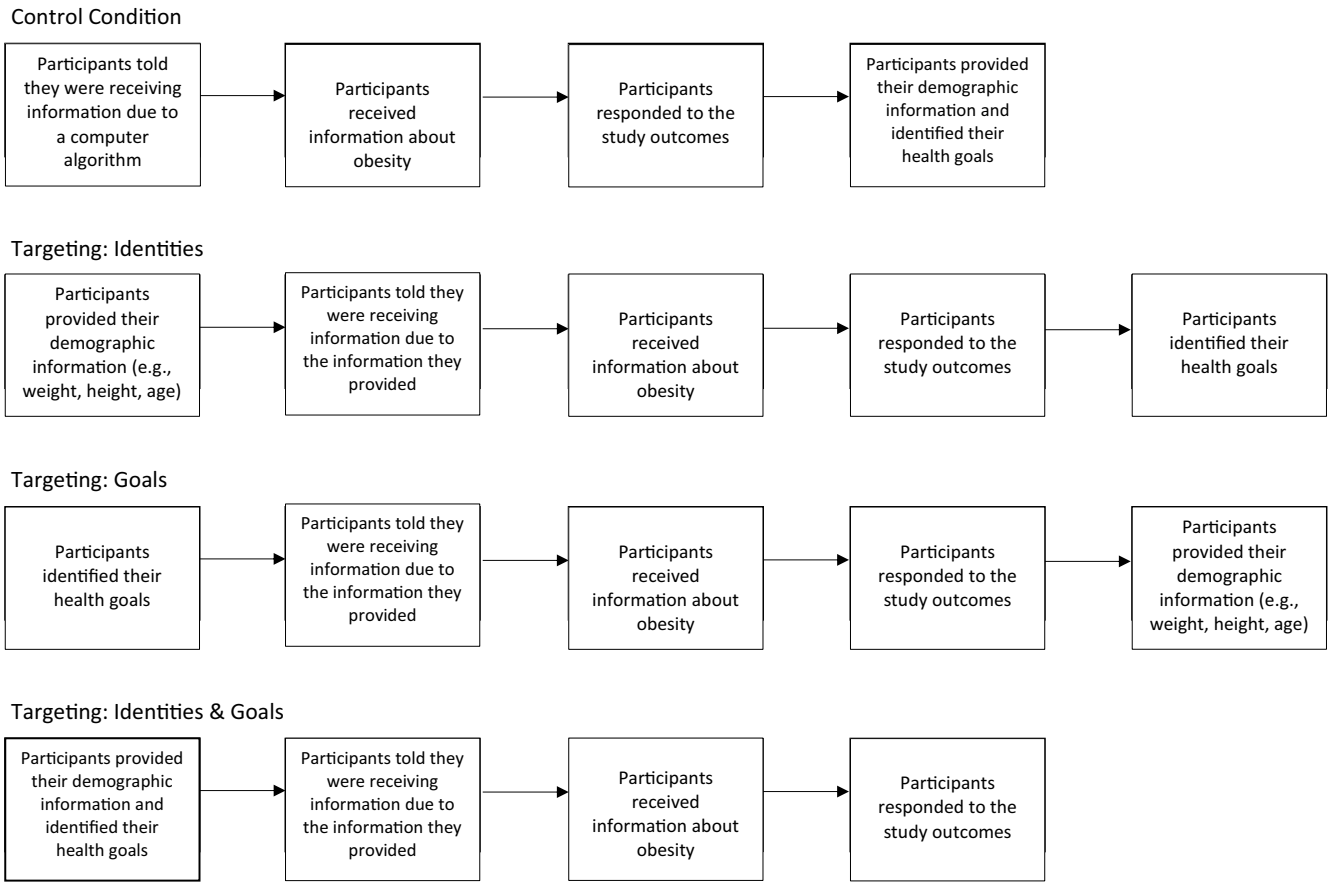


Fig. 1. Study procedure (Studies 1–2).
Note. Study 1 only included the "Control" and "Targeting: Identities" conditions. Study 2 included all four conditions.

worry that other people would think I am at an unhealthy weight", $\alpha = 0.84$).

2.1.5.3. Intentions to engage in recommended lifestyle behaviors. Behavioral intentions have been identified in several health models, such as the theory of planned behavior and the theory of reasoned action, as an important determinant of behavior change; furthermore, meta-analytic data shows that behavioral intentions have a reliable small-to-medium effect on actual behavior (Ajzen, 1991; Fishbein & Ajzen, 1975; Nisson & Earl, in press; Sheppard, Hartwick, & Warshaw, 1988; Webb & Sheeran, 2006). As such, participants reported their intentions to engage in behavioral recommendations that were derived from the paragraphs on three items using a Likert-type scale ranging from 1, Strongly Disagree, to 7, Strongly Agree (e.g., "I intend to… follow the healthy lifestyle recommendations described in the paragraphs; monitor the types of food I eat throughout the week; exercise for at least 20 min daily", $\alpha = 0.79$). These items were specifically designed to measure participants' uptake of recommendations included in the paragraphs.

2.1.5.4. Self-efficacy for engaging in recommended lifestyle behaviors. Self-efficacy has a particularly strong influence on the ways in which people approach their goals and respond to challenges (Bandura, 1977). Additionally, self-efficacy has been consistently identified as an antecedent of behavioral engagement (Ajzen, 2002; Rosenstock, Strecher, & Becker, 1988; Strecher, DeVellis, Becker, & Rosenstock, 1986). Given the importance of self-efficacy for behavior change and maintenance, participants were asked to report their perceived self-efficacy for engaging in the behavioral recommendations included in the paragraphs on three items using a Likert-type scale ranging from 1, Strongly Disagree, to 7, Strongly Agree (e.g., "I am confident that I could… follow the healthy lifestyle recommendations described in the paragraphs; monitor the types of food I eat throughout the week; exercise for at least 20 min daily", $\alpha = 0.83$).

2.1.6. Analytic strategy

Although we expected that *Information* would moderate the effects observed for the primary study outcomes, such that recipients would exhibit greater negative consequences in response to the obesity, versus the less stigmatizing healthy lifestyle habits information, there were no conditions under which *Information* produced systematic effects. Furthermore, the reported analyses replicate whether or not *Information* is included. Thus, for the sake of parsimony, analyses including *Information* as a factor are presented in the online supplement.

We conducted multiple linear regression analyses to examine how perceiving identity-based relevance through *Targeting* varied as a function of participants' weight status. Analyses included *Targeting* and participant *BMI* (entered in Block 1), as well as the *Targeting* × *BMI* interaction term (entered in Block 2). For the current and following study, when interactions with BMI were significant, we examined means from the generalized linear model for participants with a BMI one standard deviation below the mean (corresponding with an "average weight" classification based on standards set by the World Health Organization) and participants with a BMI one standard deviation above the mean (corresponding with an "obese" classification). Interaction and main effects relevant to the main hypotheses are reported below, and all other effects are reported in the online supplement. Furthermore, means and standard errors relevant to the main hypotheses are presented in Table 1a.

Table 1a
Study 1: Means and standard errors for the effect of *Targeting*, moderated by participant *BMI*, on self-attributions, irritation, self-conscious emotions, behavioral intentions, and self-efficacy.

	Control Mean (SE)	Identities Mean (SE)	*p* value
Self-attribution			
−1 BMI	2.11 (0.119)	1.99 (0.125)	0.483
+1 BMI	1.93 (0.108)	2.73 (0.127)	< 0.001
Irritation			
−1 BMI	1.77 (0.117)	1.64 (0.124)	0.444
+1 BMI	1.90 (0.107)	2.23 (0.126)	0.045
Self-conscious emotions			
−1 BMI	2.11 (0.119)	2.27 (0.126)	0.174
+1 BMI	2.82 (0.109)	2.89 (0.128)	0.665
Behavioral intentions			
−1 BMI	5.24 (0.150)	5.37 (0.159)	0.565
+1 BMI	5.14 (0.137)	5.19 (0.161)	0.827
Self-efficacy			
−1 BMI	5.68 (0.147)	5.70 (0.156)	0.895
+1 BMI	5.49 (0.134)	5.35 (0.158)	0.498

We first present the effects of targeting on relevance, operationalized as self-attributions. Next, we test the efficacy of increasing relevance by examining the direct effects of targeting on irritation, self-conscious emotions, behavioral intentions, and self-efficacy. Finally, we examine the hypothesis that the link between attributions and behavior may be explained via negative emotional responding by testing the indirect effects of self-attributions on intentions and self-efficacy through irritation and self-conscious emotions.

2.2. Study 1 results

2.2.1. Attributions for receiving the health information

A significant main effect of *Targeting* emerged on participants' self-attributions, showing that our experimental manipulation was effective ($b = 0.34$, SE = 0.12, $t(263) = 2.82$, $p = .005$, $r = 0.17$); participants who were targeted were more likely to attribute receiving the information to something about themselves than participants in the control condition. Furthermore, a significant *Targeting* × *BMI* interaction emerged ($b = 0.46$, SE = 0.12, $t(263) = 3.87$, $p < .001$, $r = 0.23$). Estimated means indicated that targeting had no effect on the self-attributions made by participants with a BMI one standard deviation below the mean ($F(1,263) = 0.49$, $p = .483$, $d = -0.09$), but significantly increased self-attributions for participants with a BMI one standard deviation above the mean ($F(1,263) = 23.15$, $p < .001$, $d = 0.59$). The main effect of *BMI* was not significant ($b = -0.09$, SE = 0.08, $t(263) = -1.17$, $p = .242$, $r = 0.07$).

Furthermore, participants were asked an open-ended survey item about why they believed they received the information during the survey when (a) they agreed or strongly agreed with the self-attribution measure ("I received these paragraphs due to something specific about me"), and (b) they reached the end of the study. Among participants who were targeted on identities, weight was the most commonly reported reason for receiving the information; 16.0% explicitly mentioned their weight or BMI as the reason they received the information, while 0% mentioned another demographic factor (e.g., race, gender, age) as the reason they received the information[3]. Among participants in the control condition, 2.8% explicitly mentioned their weight or BMI, while 0.7% mentioned another demographic factor.

2.2.2. Irritation

A marginal *Targeting* × *BMI* interaction emerged ($b = 0.23$, $SE = 0.12$, $t(263) = 1.96$, $p = .051$, $r = 0.12$). Estimated means indicated that targeting had no effect on irritation for participants with a BMI one standard deviation below the mean ($F(1,263) = 0.59$, $p = .444$, $d = -0.09$) but significantly increased irritation for participants with a BMI one standard deviation above the mean ($F(1,263) = 4.05$, $p = .045$, $d = 0.25$). However, the main effects of *Targeting* ($b = 0.10$, $SE = 0.12$, $t(263) = 0.84$, $p = .400$, $r = 0.05$) and *BMI* ($b = 0.07$, $SE = 0.08$, $t(263) = 0.87$, $p = .386$, $r = 0.05$) were not significant.

2.2.3. Self-conscious emotions

A significant main effect of *BMI* revealed that participants with higher BMIs reported greater self-conscious emotions ($b = 0.36$, $SE = 0.08$, $t(263) = 4.53$, $p < .001$, $r = 0.27$). Neither the main effect of *Targeting* ($b = 0.12$, $SE = 0.12$, $t(263) = 0.96$, $p = .339$, $r = 0.06$), nor the *Targeting* × *BMI* interaction were significant ($b = -0.04$, $SE = 0.120$, $t(263) = -0.04$, $p = .717$, $r = 0.00$).

2.2.4. Behavioral intentions

Analyses revealed non-significant main effects of *Targeting* and *BMI*, as well as a non-significant *Targeting* × *BMI* interaction (all $bs < 0.09$, all $ps > .574$).

2.2.5. Self-efficacy

Similar to behavioral intentions, analyses revealed non-significant main effects of *Targeting* and *BMI*, as well as a non-significant *Targeting* × *BMI* interaction (all $bs < -0.01$, all $ps > .569$).

2.2.6. Testing the proposed model

To identify the downstream consequences associated with perceiving relevance, operationalized as self-attributions, we conducted structural equation modeling in Amos 24 (Arbuckle, 2014). The model (see Fig. 2a) used *Targeting*, *BMI*, and the *Targeting* × *BMI* interaction as predictors of self-attributions. Next, the model tested the extent to which self-attributions predicted irritation and self-conscious emotions. Finally, the model examined how these emotional responses mediated the relationship between self-attributions and the primary study outcomes. Because preliminary analyses revealed that the relationship between self-attributions and negative emotional responding was not moderated by *Information*, contrary to our predictions, the presented model is collapsed across information content.

All direct effects were modeled in the current and subsequent studies. For the following analyses, fit statistics and unstandardized parameter estimates for the theoretical model outcomes are shown in Fig. 2a. All other parameter estimates, including direct effects, are reported in the online supplement.

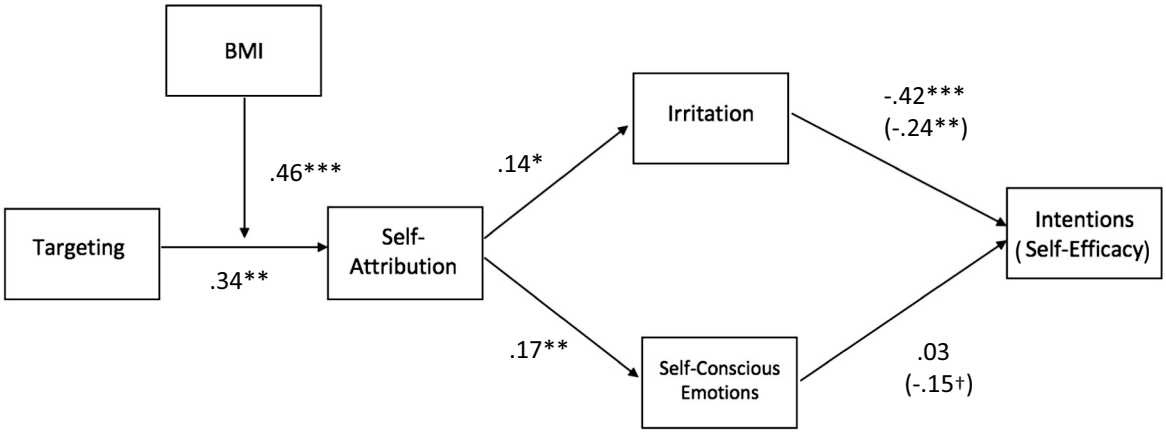
As reported in multiple regression, being targeted on identities was associated with stronger self-attributions, particularly for participants with higher BMIs. Stronger self-attributions predicted increases in both irritation ($b = 0.14$, $SE = 0.06$, $p = .019$) and self-conscious emotions ($b = 0.17$, $SE = 0.06$, $p = .005$). Irritation predicted reductions in behavioral intentions ($b = -0.42$, $SE = 0.08$, $p < .001$) and self-efficacy ($b = -0.24$, $SE = 0.08$, $p = .003$), whereas self-conscious emotions predicted marginal reductions in self-efficacy ($b = -0.15$, $SE = 0.08$, $p = .057$) and did not predict behavioral intentions ($b = 0.03$, $SE = 0.08$, $p = .741$).

2.3. Discussion

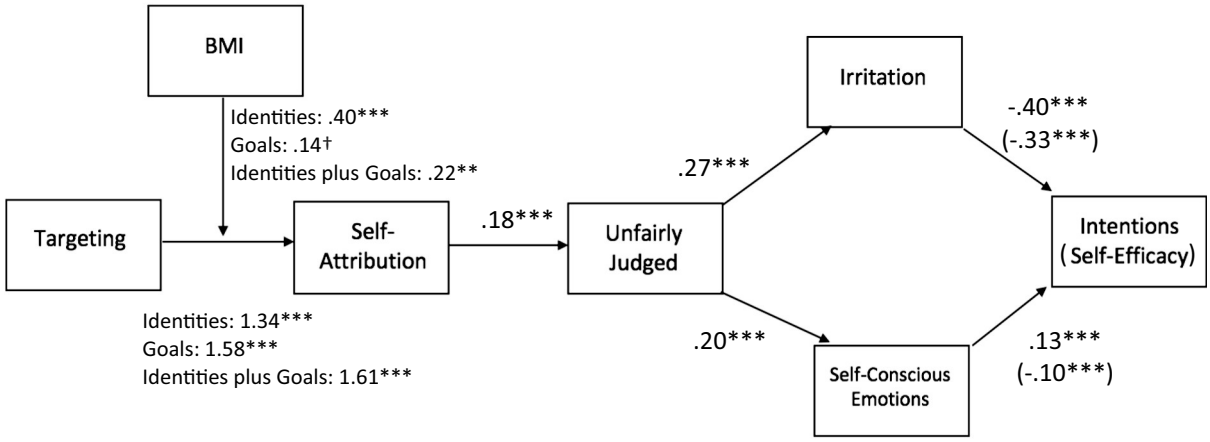
Although leveraging relevance is generally expected to facilitate behavior uptake for recipients, Study 1 shows that leveraging relevance

[3] Additional analyses revealed that across studies, demographic factors (gender, race, age, and socioeconomic status) did not moderate the relationship between *Targeting* and self-attributions, and the relationship between *Targeting* and self-attributions remained significant even when controlling for the aforementioned demographic factors. These analyses are reported in the online supplement.

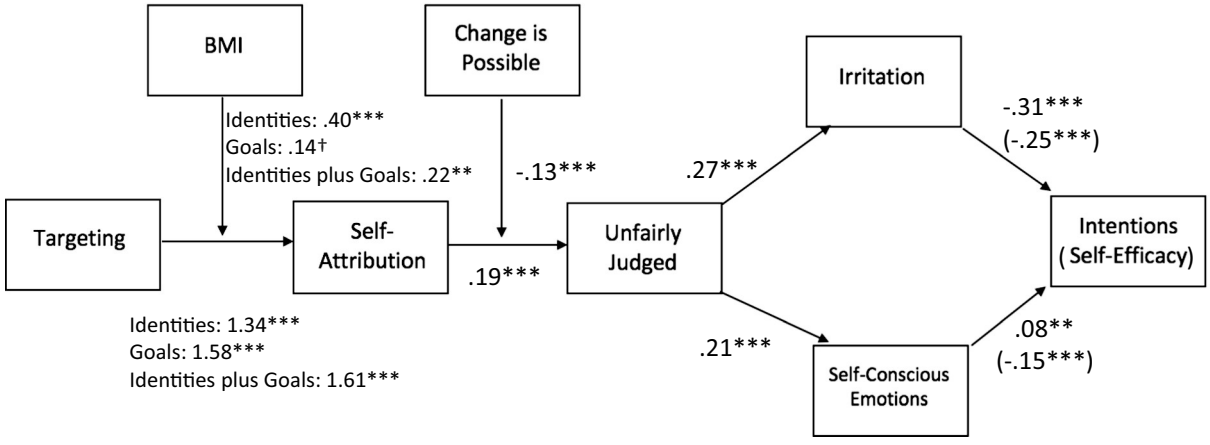
a. Theoretical model tested in study 1.



b. Theoretical model tested in study 2.



c. Theoretical model tested in study 2, including the New Year's mechanism: Beliefs that change is possible.



(caption on next page)

Fig. 2. Theoretical models tested in AMOS.
a. Theoretical model tested in study 1.
Note. Coefficients are unstandardized. † = $p < .10$; * = $p < .05$; ** = $p < .01$; *** = $p < .001$. Coefficients for the path between negative emotional responding and the outcomes, intentions and self-efficacy, are presented in the model as intentions (self-efficacy). Fit statistics were sufficient (χ^2 (df = 1) = 0.774, $p = .379$, RMSEA = 0.000, CFI = 1.00, TLI = 1.01).
b. Theoretical model tested in study 2.
Note. Coefficients are unstandardized. † = $p < .10$; * = $p < .05$; ** = $p < .01$; *** = $p < .001$. Coefficients for the path between negative emotional responding and the outcomes, intentions and self-efficacy, are presented in the model as intentions (self-efficacy). Fit statistics were sufficient (χ^2 (df = 3) = 3.25 $p = .355$, RMSEA = 0.007, CFI = 1.00, TLI = 0.999).
c. Theoretical model tested in study 2, including the New Year's mechanism: Beliefs that change is possible.
Note. Coefficients are unstandardized. † = $p < .10$; * = $p < .05$; ** = $p < .01$; *** = $p < .00$. Coefficients for the path between negative emotional responding and the outcomes, intentions and self-efficacy, are presented in the model as intentions (self-efficacy). Fit statistics were sufficient (χ^2 (df = 11) = 26.12 $p = .006$, RMSEA = 0.027, CFI = 0.998, TLI = 0.977).

based on weight identities, via information targeting, produces reductions in behavioral intentions and self-efficacy through participants' negative emotional responding. Although multiple regression analyses revealed a marginal direct effect of the *Targeting* × *BMI* interaction on irritation, findings showed non-significant direct effects and interactions of targeting for self-conscious emotions, behavioral intentions, and self-efficacy.

Additionally, Study 1 revealed that being in the targeting condition was associated with stronger self-attributions for receiving the information, particularly among participants with higher BMIs. Self-attributions, in turn, predicted increases in irritation and self-conscious emotions, which subsequently predicted self-efficacy and behavioral intentions. Contrary to our predictions, the relationship between perceived relevance and negative emotional responding did not vary as a function of which information (obesity or healthy lifestyle habits) participants saw.

Irritation predicted decrements in behavioral intentions and self-efficacy, whereas self-conscious emotions produced marginal reductions in self-efficacy and had no significant effect on behavioral intentions. Taken together, Study 1 demonstrates that attempts to motivate behavior change by leveraging identity-based relevance can increase negative affect or perceptions that one lacks the ability to enact lifestyle modifications, inhibiting behavior change.

3. Study 2

We conducted Study 2 at two time periods, approximately 3–4 months apart, to investigate three primary research questions. Study 1 provided preliminary evidence that perceiving identity-based relevance produced negative effects on behavioral intentions and self-efficacy through participants' emotional responses. However, the reason why perceiving identity-based relevance produced negative emotional responding is unclear. Although participants who are exposed to the targeting manipulation are more likely to attribute the receipt of the information to themselves, they may also infer that relevance is being ascribed to them by an external source. Consequently, they may experience identity threat as a function of feeling unfairly judged on the basis of their weight identity. As such, we examined perceptions of being unfairly judged as a potential mechanism underlying the relationship between perceiving identity-based relevance and our primary study outcomes (irritation, self-conscious emotions, self-efficacy, and behavioral intentions).

The second primary aim of Study 2 was to examine if changing the dimensions on which relevance is activated mitigates or exacerbates identity threat. One possible strategy to mitigate identity threat may be to leverage relevance by linking information to another personal, but self-initiated characteristic, such as health goals. As such, Study 2 tested how recipients construe relevance after being targeted on their weight identities, health goals, or a combination of both identities and goals, to examine potential boundary conditions of the findings observed in Study 1.

Empirical evidence on goal pursuit suggests that targeting on goals should be beneficial; people automatically orient attention to goal-relevant (versus control) information and evaluate goal-relevant objects more positively than non-relevant objects (Ferguson & Bargh, 2004; Moskowitz, 2002; Vogt, De Houwer, Moors, Van Damme, & Crombez, 2010). Thus, because health goals are personal characteristics that are typically self-initiated, in contrast to social identities, perceiving goal-based relevance may circumvent the identity threat that is elicited when perceiving identity-based relevance. Given the greater ambiguity associated with being targeted on both identities and health goals, we had competing predictions about how participants in this condition would respond. Because participants can now identify another reason to explain why they are receiving the information (e.g., their goals), the increased level of ambiguity may reduce feelings of identity threat compared to participants who are targeted solely on identities. However, if participants still anchor on the belief that they received the information due to their weight identity, rather than their goals, they may be just as likely to experience identity threat as participants who are targeted solely on identities.

In addition to leveraging goal-based relevance, another possibility for reducing identity threat is changing the context in which the information is received. Contextual factors, such as temporal changes, physical environments, or psychological states, can influence the ways in which people approach, evaluate, and process information (Rotliman & Schwarz, 1998). Moreover, situational cues can activate particular aspects of people's social identities that influence how they perceive, cope with, and respond to threats (Aronson et al., 1999; Elmore & Oyserman, 2012; Oyserman et al., 2007; Sekaquaptewa & Thompson, 2003; Spencer, Steele, & Quinn, 1999; Steele & Aronson, 1995).

Given the possibility for context cues to influence how people process information and respond to stigma cues, the third study aim was to examine the effects of changing the context in which relevance is activated. Specifically, we investigated whether and why a specific context, the New Year's holiday, may exacerbate or mitigate threat in response to identity-based relevance. We developed competing hypotheses about whether or not the New Year's context would attenuate identity threat. Targeting messages as a function of identities may be more likely to elicit identity threat in a New Year's context because recipients may perceive that the obesity information reflects weight loss goals that the research team thinks they *should* have based on their BMI, increasing feelings of stigma and weakening internal motivation to lose weight (Lepper, Greene, & Nisbett, 1973). Alternatively, New Year's is a temporal landmark when people are ostensibly more amenable to making behavior changes, and as such, may exhibit greater aspirational behavior, particularly for dieting and exercising (Dai, Milkman, & Riis, 2014; Dai, Milkman, & Riis, 2015). Consequently, people may be more receptive to weight-related information if the context signals that change is possible, for example (e.g., I do not have to be tied to this marginalized identity forever; Dai et al., 2014; Faccio, Nardin, & Cipolletta, 2016; Pronin, Steele, & Ross, 2004).

Due to the increased complexity of Study 2's design compared to Study 1, we conducted two pilot studies testing (a) the efficacy of the two additional targeting manipulations (e.g., health goals and identities

plus goals), and (b) the feasibility of collecting data at New Years. Details regarding the pilot studies are available in the online supplement.

3.1. Methods

3.1.1. Participants

Using the parameters from the previous studies, we conducted power analyses using G*Power (v. 3.1; Faul et al., 2007). Because Study 2 extended Study 1 by including the time of data collection as a factor, the analysis suggested a minimum of 467 participants. We recruited additional participants given planned data exclusions and to achieve additional power to detect the context interaction. Data collection at Time 1 began the day after New Year's and continued for approximately one month until our predetermined sample size was achieved. Data collection for Time 2 was collected outside of the New Year's context (April–May).

1022 U.S. adults (Time 1) and 1004 U.S. adults (Time 2) completed the experiment on Mturk, and participants received $1.75 in exchange for their participation. After calculating participants' BMI using their self-reported height and weight, $31_{\text{Time 1}}/44_{\text{Time 2}}$ participants were excluded because their BMI categorized them as underweight, $19_{\text{Time 1}}/12_{\text{Time 2}}$ participants were excluded because their BMI was categorized as overweight or obese although they self-identified their body type as "athletic", and $24_{\text{Time 1}}/21_{\text{Time 2}}$ participants were excluded because their BMI was greater than three standard deviations above the mean. After these exclusions, we retained 948 adults in Time 1 (60.0% female; age: 18–85, $M = 37.63$, $SD = 12.19$; 75.4% European American; BMI: 18.55–52.30, $M = 28.24$, $SD = 6.74$) and 927 adults in Time 2 (55.8% female; age: 18–75, $M = 38.13$, $SD = 12.52$; 74.4% European American; BMI: 18.56–50.63, $M = 27.78$, $SD = 6.48$). Because data were collected at two time points, data analysis for the initial data collection began before all data were collected. However, analyses on the full sample were not conducted until data collection was completed based on our a priori sample size determinations. Analyses had 80% power to detect an effect size of $f^2 = 0.01$.

3.1.2. Design

A 4 (*Targeting*: Identities, Health Goals, Identities plus Health Goals, Control) × 2 (*Time*: within New Year's context, outside of New Year's context) × Continuous (Participant *BMI*) between-subjects design was used. Because Study 1 revealed no significant moderation of downstream consequences by information type, *Information* was dropped as a factor and all participants received the standard-of-care obesity information in Study 2.

3.1.3. Procedure

With the exception of the two new targeting conditions and the additional items detailed below, Study 2's procedure was identical to Study 1. As in Study 1, *Targeting* was manipulated with instructions explaining why participants received the health information. Participants who were targeted on their identities once again reported their gender, age, height, and weight at the beginning of the survey before receiving the obesity information. Participants who were targeted on their goals were presented with a list of eight health behaviors: losing weight, exercising more, eating healthier, quitting smoking, quitting use of an illegal substance, less alcohol use, getting more sleep, and reducing stress. Participants were asked to select their health goals from the provided list and could select as many health goals as they wanted. The list also included a ninth option that allowed participants to report that they did not have any current health goals. Participants who were targeted on their identities plus goals reported their demographic information and selected their health goals at the beginning of the study.

Following the manipulation, participants in the targeting conditions were told that the information was selected for them based on the information they provided, whereas participants assigned to the control condition were told that they received the information due to a randomly generated computer algorithm (see Fig. 1). All participants received the standard-of-care obesity information before responding to the study measures.

3.1.4. Measures

After reading the paragraphs, participants completed survey items identical to the measures used in Study 1. Thus, participants responded to items about their (a) self-attributions for receiving the health information, (b) emotional response to the information ($\alpha_{\text{irritation}} = 0.91$; $\alpha_{\text{self-conscious}} = 0.87$), (c) intentions to engage in the recommended lifestyle behaviors ($\alpha = 0.75$), and (d) self-efficacy for engaging in the recommended lifestyle behaviors ($\alpha = 0.79$). Moreover, participants completed additional items to test the research questions of interest, including perceptions of feeling judged and beliefs that change is possible.

3.1.4.1. Perceptions of being unfairly judged. Participants reported their perceptions of being unfairly judged on three items using a Likert-type scale ranging from 1, Not at all, to 9, Extremely ("To what extent did you feel you received the paragraphs because you were being judged unfairly; I felt that I was being discriminated against when I was given the information; To what extent did you feel that you received the information because of (mis)perceptions about people from your weight group"; $\alpha_{\text{Time 1}} = 0.73$; $\alpha_{\text{Time 2}} = 0.75$).

3.1.4.2. Beliefs that change is possible. Participants reported their beliefs that the time of year during which the data was collected reflected a time when change is possible on four items using a Likert-type scale ranging from 1, Strongly Disagree, to 7, Strongly Agree ("This time of the year is a time when… I can become a 'new me'; I can make a fresh start for my life; I can make changes in my life; other people make changes in their life"; $\alpha_{\text{Time 1}} = 0.91$; $\alpha_{\text{Time 2}} = 0.92$).

3.2. Results

3.2.1. Analytic strategy

The statistical procedure matched the methods employed in Study 1. Because two new targeting conditions were added, we created three dummy variables to reflect the targeting conditions (identities, goals, and identities plus goals), using the control condition as the reference group. Moreover, because data were collected at two time points, we controlled for *Time* in the following analyses. Therefore, the three dummy-coded targeting variables, *BMI*, and *Time* were entered in Step 1, and the two-way interactions for the dummy-coded targeting variables and *BMI* were entered in Step 2[4]. Means and standard errors relevant to the main hypotheses are presented in Table 1b.

Replicating Study 1, we first tested whether targeting increased relevance, operationalized as self-attributions. Next, we tested the efficacy of increasing relevance by examining the direct effects of targeting on irritation, self-conscious emotions, feeling judged, self-efficacy, and behavioral intentions. Third, we examined a potential mechanism through which relevance may produce negative outcomes by testing the mediating role of feeling unfairly judged on the link between self-attributions and negative emotional responding. To test if people's interpretations of relevance exacerbates or mitigates identity threat, we examined whether the type of targeting (e.g., *Identities* versus *Goals* versus *Identities plus Goals*) moderated the link between perceived relevance, operationalized as self-attributions, and feeling judged.

If the effects observed in Study 1 are due to experiencing identity

[4] Analyses revealed n-significant three-way interactions when *Time* was included as a factor. These analyses are reported in the online supplement for interested readers.

Table 1b
Study 2: Means and standard errors for the effect of *Targeting*, moderated by participant *BMI*, on self-attributions, perceptions of being unfairly judged, irritation, self-conscious emotions, behavioral intentions, and self-efficacy.

	Control Mean (SE)	**Identities** Mean (SE)	**Goals** Mean (SE)	**Identities plus Goals** Mean (SE)
Self-Attribution				
–1 BMI	1.85_{a} (0.070)	2.85_{b} (0.071)	3.29_{c} (0.076)	3.24_{c} (0.070)
+1 BMI	2.07_{a} (0.073)	3.86_{b} (0.072)	3.79_{b} (0.071)	3.90_{b} (0.069)
Unfairly Judged				
–1 BMI	1.97_{a} (0.105)	2.94_{b} (0.107)	2.63_{c} (0.115)	2.83_{bc} (0.105)
+1 BMI	2.39_{a} (0.110)	3.22_{b} (0.109)	2.32_{a} (0.108)	3.00_{b} (0.104)
Irritation				
–1 BMI	1.64_{a} (0.061)	1.76_{a} (0.061)	1.70_{a} (0.066)	1.67_{a} (0.061)
+1 BMI	1.77_{a} (0.064)	2.27_{b} (0.063)	1.88_{ac} (0.062)	2.01_{c} (0.060)
Self-Conscious Emotions				
–1 BMI	1.98_{a} (0.064)	2.28_{b} (0.064)	2.17_{b} (0.069)	2.18_{b} (0.064)
+1 BMI	3.02_{a} (0.067)	3.10_{a} (0.066)	2.94_{a} (0.065)	3.08_{a} (0.063)
Behavioral Intentions				
–1 BMI	5.46_{a} (0.074)	5.46_{a} (0.075)	5.39_{a} (0.081)	5.41_{a} (0.074)
+1 BMI	5.27_{a} (0.078)	5.19_{a} (0.077)	5.31_{a} (0.076)	5.38_{a} (0.074)
Self-efficacy				
–1 BMI	5.93_{a} (0.072)	5.84_{a} (0.073)	5.79_{a} (0.079)	5.73_{a} (0.072)
+1 BMI	5.37_{a} (0.076)	5.37_{a} (0.075)	5.45_{a} (0.074)	5.39_{a} (0.072)

Note. Shared subscripts are not statistically significantly different from one another.

threat, one possibility for reducing identity threat is prompting a psychological shift that strengthens beliefs that change is possible. To test this hypothesis, we examined if features of the New Year's context, such as beliefs that change is possible, moderated the link between perceived relevance and feeling unfairly judged. As a final step, we tested the full model from targeting to self-efficacy and intentions, with the proposed New Year's context effect, beliefs that change is possible, as a moderator of the link between self-attributions and feeling judged (see Fig. 2c).

3.2.2. Does targeting increase self-attributions as a function of BMI?

3.2.2.1. Attributions for receiving the health information. Replicating Study 1 and demonstrating that our targeting manipulation was effective, analyses revealed significant main effects showing that participants who were targeted on any characteristic reported stronger self-attributions than participants in the control condition (*Identities*: $b = 1.39$, $SE = 0.07$, $t(1866) = 19.41$, $p < .001$, $r = 0.41$; *Goals*: $b = 1.58$, $SE = 0.07$, $t(1866) = 21.81$, $p < .001$, $r = 0.45$; *Identities plus Goals*: $b = 1.61$, $SE = 0.07$, $t(1866) = 22.63$, $p < .001$, $r = 0.46$). Moreover, a significant effect of *BMI* showed that participants with higher BMIs were more likely to make self-attributions than participants with lower BMIs ($b = 0.11$, $SE = 0.05$, $t(1866) = 2.17$, $p = 030$, $r = 0.05$).

Further replicating and extending Study 1, the *Identities* × *BMI* and *Identities plus Goals* × *BMI* interactions were significant (*Identities*: $b = 0.40$, $SE = 0.07$, $t(1866) = 5.56$, $p < .001$, $r = 0.13$; *Identities plus Goals*: $b = 0.22$, $SE = 0.07$, $t(1866) = 3.19$, $p = .001$, $r = 0.07$). Estimated means showed that, compared to the control condition, being targeted on any dimension increased self-attributions among participants with a BMI one standard deviation below the mean (all $ps < .001$), but the effects were stronger for participants with a BMI one standard deviation above the mean (all $ps < .001$). Although the *Goals* × *BMI* interaction was marginal ($b = 0.14$, $SE = 0.07$, $t(1866) = 1.94$, $p = .053$, $r = 0.04$), the pattern of means were consistent with those observed for the *Identities* × *BMI* and *Identities plus Goals* × *BMI* interactions. The main effect of *Time* was not significant ($b = 0.08$, $SE = 0.05$, $t(1866) = 1.61$, $p = .107$, $r = 0.04$). Taken together, findings show that targeting on any dimension increased perceptions of relevance, particularly for participants with higher (versus lower) BMIs.

As in Study 1, participants were asked an open-ended survey item about why they believed they received the paragraphs, and weight was the most frequently cited reason; among participants who were targeted on identities, 50.1% explicitly identified their weight or BMI as the reason they received the information, while 1.1% identified another demographic factor. Among participants who were targeted on identities plus goals, 27.5% explicitly identified their weight or BMI as the reason they received the information, while 2.2% identified another demographic factor. Only 2.4% of participants in the control condition and 0.7% of participants who were targeted on goals explicitly identified their weight, versus other demographic factors (0.7% and 0.2%, respectively), as the reason for receiving the information.

3.2.3. Does increasing relevance through targeting directly impact outcomes?

3.2.3.1. Irritation. Consistent with Study 1, analyses revealed that targeting on *Identities* ($b = 0.31$, $SE = 0.06$, $t(1866) = 4.89$, $p < .001$, $r = 0.11$) or *Identities plus Goals* ($b = 0.14$, $SE = 0.06$, $t(1866) = 2.18$, $p = .030$, $r = 0.05$) increased participants' irritation. Further replicating Study 1, the *Identities* × *BMI* interaction was significant ($b = 0.19$, $SE = 0.06$, $t(1866) = 3.02$, $p = .003$, $r = 0.07$). Estimated means indicated that targeting had no effect on irritation for participants with a BMI one standard deviation below the mean ($p = .173$, 95% CI [−0.052, 0.287]), but significantly increased irritation for participants with a BMI one standard deviation above the mean ($p < .001$, 95% CI [0.317, 0.668]). However, neither the main effect of targeting on *Goals* ($b = 0.08$, $SE = 0.06$, $t(1866) = 1.32$, $p = .187$, $r = 0.03$), *BMI* ($b = 0.07$, $SE = 0.04$, $t(1866) = 1.57$, $p = .117$, $r = 0.04$), or *Time* ($b = -0.01$, $SE = 0.04$, $t(1866) = -0.12$, $p = .906$, $r = 0.00$) were significant. Furthermore, neither the *Goals* × *BMI* ($b = 0.02$, $SE = 0.06$, $t(1866) = 0.32$, $p = .751$, $r = 0.01$) nor the *Identities plus Goals* × *BMI* interactions were significant ($b = 0.11$, $SE = 0.06$, $t(1866) = 1.73$, $p = .084$, $r = 0.04$).

3.2.3.2. Self-conscious emotions. Replicating Study 1, a significant main effect of *BMI* ($b = 0.52$, $SE = 0.05$, $t(1866) = 11.35$, $p < .001$, $r = 0.25$) showed that participants with higher BMIs reported greater self-conscious emotions. In contrast to the non-significant effects observed in Study 1, analyses revealed that targeting on *Identities* ($b = 0.19$, $SE = 0.07$, $t(1866) = 2.87$, $p = .004$, $r = 0.07$) or *Identities plus Goals* ($b = 0.13$, $SE = 0.07$, $t(1866) = 1.98$, $p = .047$, $r = 0.05$) increased participants' self-conscious emotions. A significant

Goals × *BMI* interaction also emerged ($b = -0.13$, $SE = 0.07$, $t(1866) = -1.99$, $p = .047$, $r = 0.05$). Estimated means indicated that targeting on *Goals* increased self-conscious emotions for participants with a BMI one standard deviation below the mean ($p = .046$, 95% CI [0.004, 0.374]), but had no significant effect for participants with a BMI one standard deviation above the mean ($p = .417$, 95% CI [−0.258, 0.107]). Neither the main effects of targeting on *Goals* ($b = 0.06$, $SE = 0.07$, $t(1866) = 0.85$, $p = .393$, $r = 0.02$) nor *Time* ($b = 0.03$, $SE = 0.05$, $t(1866) = 0.73$, $p = .464$, $r = 0.02$) were significant. Moreover, neither the *Identities* × *BMI* ($b = -0.11$, $SE = 0.07$, $t(1866) = -1.66$, $p = .097$, $r = 0.04$) nor the *Identities plus Goals* × *BMI* interactions were significant ($b = -0.07$, $SE = 0.06$, $t(1866) = -1.08$, $p = .280$, $r = 0.02$).

3.2.3.3. Perceptions of being unfairly judged. Analyses revealed that targeting on any dimension increased participants' perceptions of being unfairly judged (*Identities*: $b = 0.90$, $SE = 0.11$, $t(1857) = 8.32$, $p < .001$, $r = 0.19$; *Goals*: $b = 0.30$, $SE = 0.11$, $t(1857) = 2.72$, $p = .007$, $r = 0.06$; *Identities plus Goals*: $b = 0.73$, $SE = 0.11$, $t(1857) = 6.86$, $p < .001$, $r = 0.16$) Additionally, a significant main effect of *BMI* ($b = 0.21$, $SE = 0.08$, $t(1857) = 2.84$, $p = .005$, $r = 0.07$) showed that participants with higher BMIs reported stronger perceptions of being unfairly judged. Finally, a significant *Goals* × *BMI* interaction emerged ($b = -0.37$, $SE = 0.11$, $t(1857) = -3.40$, $p = .001$, $r = 0.08$). Estimated means revealed that targeting on *Goals* increased feelings of being unfairly judged for participants with a BMI one standard deviation below the mean ($p < .001$, 95% CI [0.364, 0.974]) but had no significant effect for participants with a BMI one standard deviation above the mean ($p = .620$, 95% CI [−0.226, 0.378]). Neither the main effect of *Time* ($b = 0.09$, $SE = 0.08$, $t(1857) = 1.19$, $p = .234$, $r = 0.03$), the *Identities* × *BMI* interaction ($b = -0.07$, $SE = 0.11$, $t(1857) = -0.69$, $p = .491$, $r = 0.02$), nor the *Identities plus Goals* × *BMI* interaction were significant ($b = -0.12$, $SE = 0.11$, $t(1857) = -1.18$, $p = .240$, $r = 0.03$).

3.2.3.4. Behavioral intentions. Replicating Study 1, none of the main effects or two-way interactions were significant (all $bs < 0.08$, all $ps > .178$). However, there was a marginal effect of *BMI* ($b = -0.10$, $SE = 0.05$, $t(1862) = -1.80$, $p = .072$, $r = 0.04$), such that participants with higher BMIs reported weaker behavioral intentions.

3.2.3.5. Self-efficacy. Also replicating Study 1, none of the *Targeting* main effects, the main effect of *Time*, or two-way interactions were significant (all $bs < 0.12$, all $ps > .119$). However, the effect of *BMI* was significant ($b = -0.28$, $SE = 0.05$, $t(1866) = -5.48$, $p < .001$, $r = 0.13$), such that participants with higher BMIs reported less self-efficacy.

3.2.4. What is the mechanism through which self-attributions predict negative outcomes?: testing the proposed model

Next, we examined why increased relevance impacted our primary study outcomes. We hypothesized that increased relevance would elicit greater irritation and self-conscious emotions if participants felt unfairly judged. Matching Study 1, the tested model (shown in Fig. 2b) used *Targeting*, participant *BMI*, and the *Targeting* × *BMI* interactions as predictors of self-attributions. Next, the model examined the impact of self-attributions on our proposed mechanism: feeling unfairly judged. Finally, the model examined the extent to which (a) feeling unfairly judged predicted irritation and self-conscious emotions, and (b) negative emotional responding predicted the primary study outcomes. For the following analyses, fit statistics and unstandardized parameter estimates for the theoretical model outcomes are reported in Fig. 2b. All other parameter estimates are reported in the online supplement.

As reported in the multiple regression, targeting on any dimension increased self-attributions, particularly for participants with higher BMIs. Increased self-attributions predicted stronger perceptions of being unfairly judged ($b = 0.18$, $SE = 0.04$, $p < .001$), which, in turn, predicted significant increases in both irritation ($b = 0.27$, $SE = 0.01$, $p < .001$) and self-conscious emotions ($b = 0.20$, $SE = 0.01$, $p < .001$). Replicating Study 1, irritation produced significant reductions in both behavioral intentions ($b = -0.40$, $SE = 0.03$, $p < .001$) and self-efficacy ($b = -0.33$, $SE = 0.03$, $p < .001$). Self-conscious emotions, in contrast, predicted increases in behavioral intentions ($b = 0.13$, $SE = 0.03$, $p < .001$) and reductions in self-efficacy ($b = -0.10$, $SE = 0.03$, $p < .001$). As such, the model offers statistical evidence that feeling unfairly judged is the mechanism underlying the negative effects of increased relevance on our primary study outcomes.

3.2.5. Does type of targeting moderate the relationship between self-attributions and feeling unfairly judged?

Study findings offered preliminary evidence that targeting on any dimension increased perceived relevance. However, does perceiving relevance always make people feel judged? To test this question, we examined whether the type of targeting moderated the relationship between perceived relevance (self-attributions) and identity threat (feeling unfairly judged). We hypothesized that perceiving relevance in response to being targeted on *Goals*, versus *Identities*, would alleviate identity threat because health goals are a self-initiated characteristic. Therefore, we expected that targeting on *Identities* or *Identities plus Goals* would be associated with perceptions of being unfairly judged, and the strength of this relationship would be weakened when participants were targeted on *Goals*. To test this hypothesis, we conducted multiple linear regression using (a) the three dummy coded variables for targeting on *Identities*, *Goals*, and *Identities plus Goals*, (b) self-attributions, and (c) their interactions, on feeling unfairly judged. Main effects were entered into Block 1 and two-way interactions were entered in Block 2. When interactions were significant, we estimated means at low (−1 SD) and high (+1 SD) levels of self-attributions using a generalized linear model.

We assessed whether the relationship between self-attributions and feeling judged was moderated by type of targeting by examining the *Targeting* × *Self-Attribution* interactions. Analyses revealed significant interactions for participants targeted on their *Identities*, *Goals*, and *Identities plus Goals* (*Identities* × *Self-Attribution*: $b = -0.43$, $SE = 0.13$, $t(1858) = -3.21$, $p = .001$, $r = 0.07$; *Goals* × *Self-Attribution*: $b = -0.74$, $SE = 0.14$, $t(1858) = -5.40$, $p < .001$, $r = 0.12$; *Identities plus Goals* × *Self-Attribution*: $b = -0.73$, $SE = 0.14$, $t(1858) = -5.39$, $p < .001$, $r = 0.12$). Estimated means showed that at low self-attributions (−1 SD), participants targeted on *Identities*, *Goals*, or *Identities plus Goals* reported feeling more judged than participants in the control condition ($p_{\text{identities}} < 0.001$, 95% CI [0.332, 0.890]; $p_{\text{goals}} = 0.022$, 95% CI [0.053, 0.665]; $p_{\text{identities plus goals}} < 0.001$, 95% CI [0.495, 1.098]). At high self-attributions, however, participants targeted on *Identities* or in the control condition reported feeling more judged than participants who were targeted on *Goals* or *Identities plus Goals* (*Control* versus *Identities*: $p = .294$, 95% CI [−0.217, 0.717]; *Control* versus *Goals*: $p < .001$, 95% CI [0.656, 1.581]; *Control* versus *Identities plus Goals*: $p = .004$, 95% CI [0.208, 1.128]; *Identities* versus *Goals*: $p < .001$, 95% CI [0.599, 1.139]; *Identities* versus *Identities plus Goals*: $p < .001$, 95% CI [0.152, 0.683]). Additionally, participants targeted on their *Identities plus Goals* reported stronger perceptions of being unfairly judged than participants who were targeted on *Goals* ($p = .001$, 95% CI [0.064, 0.236]).

Taken together, findings show that when participants make stronger self-attributions for receiving health information, perceiving relevance based on identities was associated with stronger perceptions of being unfairly judged than perceiving relevance based on identities plus goals. Additionally, perceiving relevance based on identities or identities plus goals was associated with stronger perceptions of being unfairly judged than perceiving relevance based on goals.

3.2.6. Testing the new year's context effect: does Time moderate the relationship between self-attribution and feeling judged?

The third primary goal of Study 2 was to determine the role of the New Year's context in exacerbating or mitigating identity threat. As a first step, we included *Time* as a moderating factor to determine whether the relationship between self-attributions and perceptions of being unfairly judged was impacted by the New Year's context. Multiple regression analyses showed a non-significant *Self-Attribution* × *Time* interaction ($b = -0.09$, $SE = 0.08$, $t(1862) = -1.12$, $p = .263$, $r = 0.03$). As such, analyses demonstrate that the New Year's holiday alone did not moderate the link between perceived relevance and feeling unfairly judged.

3.2.7. Testing the new year's context effect: do beliefs that change is possible moderate the relationship between self-attributions and feeling unfairly judged?

Although the New Year's holiday itself did not impact the extent to which participants felt unfairly judged when perceiving relevance, we tested whether shifts in the psychological state activated by the New Year's context would mitigate identity threat. Therefore, we assessed participants' beliefs that change is possible[5]. Independent samples t-tests using *Time* as a factor demonstrated that in a New Year's context, participants exhibited stronger beliefs that change is possible ($t(1, 1871) = 4.25$, $p < .001$, $d = 0.20$; $M_{\text{Time1}} = 5.23$, $SD_{\text{Time1}} = 1.21$; $M_{\text{Time2}} = 4.99$, $SD_{\text{Time2}} = 1.21$). To test our hypothesis that this psychological shift would moderate the relationship between perceived relevance and feeling judged, multiple linear regression analyses examined the main effects (*Self-attributions* and *Beliefs that Change is Possible*, entered in block 1), and the *Self-Attribution* × *Beliefs that Change is Possible* interaction term (entered in block 2).

3.2.7.1. Beliefs that change is possible. Analyses revealed a significant interaction ($b = -0.14$, $SE = 0.04$, $t(1860) = -4.08$, $p < .001$, $r = 0.09$); among participants who made weaker self-attributions (−1 SD), beliefs that change is possible had no significant impact on feeling unfairly judged ($M_{-1\text{ SD Change is Possible}} = 2.32$, $SE_{-1\text{ SD Change is Possible}} = 0.07$; $M_{+1\text{ SD Change is Possible}} = 2.40$, $SE_{+1\text{ SD Change is Possible}} = 0.08$). Among participants who made stronger self-attributions (+1 SD), however, stronger beliefs that change is possible was associated with reduced perceptions of feeling unfairly judged ($M = 2.75$, $SE = 0.07$) compared to participants who reported weaker beliefs that change is possible ($M = 3.24$, $SE = 0.08$).

3.2.8. Testing the new year's context effect in AMOS

As a final step, we included the New Year's context effect, beliefs that change is possible, in an AMOS model (see Fig. 2c). This model was identical to the previously tested model (see Fig. 2b) with one important difference: this model tested whether the link between self-attributions and feeling judged was moderated by participants' beliefs that change is possible. Fit statistics and unstandardized parameter estimates for the theoretical model can be found in Fig. 2c. All other parameter estimates are reported in the online supplement.

Replicating the earlier model, analyses revealed that targeting on any characteristic increased self-attributions, particularly for participants with higher BMIs. Self-attributions predicted stronger perceptions of being unfairly judged ($b = 0.19$, $SE = 0.04$, $p < .001$), and this relationship was moderated by participants' beliefs that change is possible ($b = -0.13$, $SE = 0.03$, $p < .001$). Feeling judged, in turn, predicted increases in both irritation ($b = 0.27$, $SE = 0.01$, $p < .001$) and self-conscious emotions ($b = 0.21$, $SE = 0.01$, $p < .001$). Further replicating the earlier model, irritation produced reductions in behavioral intentions ($b = -0.31$, $SE = 0.03$, $p < .001$) and self-efficacy ($b = -0.25$, $SE = 0.03$, $p < .001$). Self-conscious emotions, in contrast, predicted increases in behavioral intentions ($b = 0.08$, $SE = 0.03$, $p = .006$) and reductions in self-efficacy ($b = -0.15$, $SE = 0.03$, $p < .001$).

3.3. Discussion

Study 2 had three primary aims: (1) identifying the mechanism underlying the relationship between perceived relevance and negative outcomes, (2) examining whether targeting on health goals, or identities in combination with health goals, mitigates identity threat, and (3) understanding whether and why the New Year's context may mitigate identity threat. Replicating Study 1, Study 2 revealed that being targeted on any dimension produced stronger self-attributions, particularly among participants with higher BMIs.

Further replicating Study 1 using a high-powered sample, direct effects showed that targeting on identities increased feelings of irritation, but only among participants with higher BMIs. Although being targeted on any dimension also increased self-conscious emotions and perceptions of being unfairly judged, targeting on goals only increased these outcomes for participants with lower (versus higher) BMIs. Although the effect of identity-based targeting on feeling unfairly judged was not moderated by participant BMI, extant research shows that exposure to stigmatizing communication or cues about weight can facilitate negative consequences for people regardless of their weight status (Incollingo-Rodriguez, Heldreth, & Tomiyama, 2016; Puhl, Luedicke, et al., 2013). Finally, consistent with Study 1, targeting did not produce direct effects on behavioral intentions or self-efficacy.

Our theorized model revealed that being targeted on any dimension produced stronger self-attributions, particularly among participants with higher BMIs. Furthermore, self-attributions predicted our proposed mechanism, feeling unfairly judged, which subsequently produced increases in both irritation and self-conscious emotions. Irritation predicted significant reductions in behavioral intentions and self-efficacy. Self-conscious emotions, in contrast to Study 1, predicted significant increases in behavioral intentions, as well as significant reductions in self-efficacy.

Type of targeting moderated the relationship between perceived relevance (self-attributions) and identity threat (feeling unfairly judged). Estimated means revealed that when participants made weak self-attributions, being targeted on any dimension was associated with feeling greater judgment than participants in the control condition. At high self-attributions, however, participants who were targeted on identities or who were in the control condition reported feeling more judged than participants who were targeted on their identities plus goals. Additionally, participants who were targeted on their identities plus goals reported feeling more judged than participants who were targeted on goals. Collectively, findings suggest that perceiving relevance in response to being targeted on goals or identities plus goals may ameliorate some of the identity threat associated with being targeted solely on identities.

Finally, Study 2 showed that the New Year's holiday alone produced no significant effects on the relationship between self-attributions and perceptions of being unfairly judged. As such, the New Year's holiday neither exacerbated nor ameliorated identity threat. However, Study 2 findings offered evidence that shifts in people's psychological state, which may be activated by the New Year's context, may mitigate the consequences of identity threat. Specifically, among participants who perceived relevance (e.g., made stronger self-attributions), having strong beliefs that change is possible mitigated feelings of being unfairly judged compared to participants who did not hold these beliefs. Taken together, findings demonstrate that although the New Year's

[5] We also examined participants' (a) level of exposure to health promotion messages, (b) perceived access to resources, and (c) perceived norms about other U.S. adults' health behavior. Although these beliefs were higher in the New Year's context, they did not moderate the link between perceived relevance and feeling unfairly judged. Additional details, as well as test statistics for these alternative mechanisms, are reported in the online supplement.

holiday itself does not attenuate identity threat, shifts in people's psychological state, prompted by the New Year's context, may mitigate identity threat.

4. General discussion

Although an extensive body of research lauds the benefits of relevance for persuasion, the present work identifies conditions under which, and for whom, leveraging relevance may backfire. Furthermore, this work identifies the psychological processes underlying when and why negative responses to relevance may emerge. Across two experiments, we find that when participants were targeted on their social identities (weight status), health goals, or their identities plus goals, they were more likely to perceive relevance (make self-attributions for receiving the health information; Hypothesis 1a). Because experiences with weight stigma and weight-based stereotypes may vary as a function of weight status, we expected that participants with higher BMIs would exhibit greater sensitivity to the targeting manipulation. Consistent with our predictions, participants with higher (versus lower) BMIs reported stronger self-attributions in response to the targeting manipulation (Hypothesis 1b).

Analyses revealed that targeting on different dimensions (e.g., identities, goals, or identities plus goals) produced several direct effects on participants' emotional responses. A marginal interaction in Study 1 showed that being targeted on weight identities increased irritation among participants with higher (versus lower) BMIs. However, the targeting manipulation showed no significant effects on self-conscious emotions. Using a high-powered replication, Study 2 showed that targeting on identities or identities plus goals produced significant increases in both irritation and self-conscious emotions. Moreover, emotional responses to the targeting manipulation varied as a function of participants' BMI; replicating Study 1, targeting on identities only increased irritation for participants with higher, versus lower, BMIs. Targeting on goals, in contrast, only increased self-conscious emotions for participants with lower, versus higher, BMIs.

Study 2 revealed the mechanism underlying the negative effects observed in Study 1. Findings demonstrated that perceiving relevance in response to the targeting manipulation increased irritation and self-conscious emotions because participants felt unfairly judged (Hypotheses 2 and 3). Participants' negative emotional responding, in turn, predicted the primary study outcomes. Although Studies 1–2 showed non-significant direct effects of targeting on behavioral intentions and self-efficacy, reductions in behavioral intentions and self-efficacy emerged through increased irritation. Self-conscious emotions, however, predicted marginal and significant reductions in self-efficacy, as well as stronger behavioral intentions (Study 2). Importantly, although self-conscious emotions predicted increased behavioral intentions, this outcome was coupled with reductions in self-efficacy. These complex and seemingly conflicting findings are consistent with prior literature showing that self-conscious emotions may increase motivation to enact a target behavior while simultaneously reducing perceptions of one's ability to do so (Baldwin, Baldwin, & Ewald, 2006; Cargill, Clark, Pera, Niaura, & Abrams, 1999; Hopfer & Clippard, 2011; Yang & Pittman, 2017). The relationship between negative affect and negative consequences, such as reductions in self-efficacy and behavioral intentions, are particularly problematic in health contexts because they have been consistently identified as inhibitors to behavior change (Ajzen & Fishbein, 2005; Baldwin et al., 2006; Rosenstock et al., 1988; Strecher et al., 1986). Thus, despite empirical and lay support for beliefs that evoking negative affect will motivate people to enact behavior change, the present work shows that leveraging negative emotions are not a viable option for long-term, complex behavior change.

Given the implications for health behavior, future research should consider the long-term psychological processes that may result from increased self-conscious emotions in response to feeling targeted, particularly based on weight identities. It is possible that self-conscious emotions may facilitate weight bias internalization, eliciting self-directed stigma and negative stereotypes about oneself, which may subsequently reinforce feelings of shame and self-blame (Durso & Latner, 2008; Kahan & Puhl, 2017; Puhl, Moss-Racusin, & Schwartz, 2007). Future work should extend the current research by testing this possibility.

Additionally, although the present work does not identify specific factors that may prompt participants to feel irritation, as opposed to self-conscious emotions, future work should consider this prospect. One possibility is that internalizing the self-attribution (e.g., “I think the information is relevant for me”) may be associated with greater self-conscious emotions. However, if participants externalize the self-attribution (e.g., “I think the research team thinks the information is relevant for me”), they may experience greater irritation. Additionally, because irritation is a secondary emotion to shame, it is possible that these disparate emotional pathways may represent a single response at different time trajectories. The current work offers some evidence for this possibility: the correlation between irritation and self-conscious emotions ranged from 0.41–0.43, suggesting considerable overlap in emotional response across studies.

4.1. Understanding the boundary conditions under which relevance backfires

In general, the reported findings offer some evidence that increasing relevance based on goals (versus identities) mitigated identity threat (Hypothesis 4). Moderation analyses examining the relationship between self-attributions and feeling unfairly judged demonstrated that when participants perceived relevance (e.g., made stronger self-attributions), they were more likely to report feeling unfairly judged when they were targeted on identities or in the control condition (versus participants who were targeted on goals or identities plus goals). Additionally, although participants who were targeted on their identities plus goals reported feeling *more* judged than participants who were targeted solely on goals, they reported feeling *less* judged than participants who were targeted solely on identities. The reduction in identity threat for participants targeted on both identities and goals may develop from the increased ambiguity that allowed participants in this condition to attribute receipt of the information to their self-initiated health goals, rather than their identities.

Furthermore, Study 2 showed that being in a New Year's context, compared to outside of a New Year's context, did not significantly impact the relationship between self-attributions and feeling unfairly judged. However, the New Year's context was characterized by stronger beliefs that change is possible, which subsequently reduced perceptions of being unfairly judged for participants who perceived high personal relevance (e.g., made strong self-attributions). Because perceived relevance produced the strongest perceptions of being unfairly judged for participants who were targeted on identities, findings offer initial evidence that shifts in participants' psychological state, prompted by the New Year's context, may mitigate the effects of identity threat (Hypothesis 5). The importance of psychological shifts associated with temporal landmarks, such as New Year's, has been documented empirically: Dai et al. (2015) find that temporal landmarks can increase aspirations for goal pursuit by increasing psychological distance between a person's past and current self. As a result, people may feel disconnected from previous failures, which may boost their current self-esteem, increase feelings of efficacy, or strengthen motivation to act in ways that are consistent with their new, positive sense of self. Thus, if people perceive that their current or future self will differ from their past self because change is possible (e.g., their weight identity is malleable), then perceiving relevance may have a weaker association with feeling judged because people feel greater psychological distance from their previous failures and experiences with stigma.

4.2. Theoretical and practical implications

This work has several important theoretical contributions and practical implications. First, these studies extend prior work on relevance by showing that increasing relevance using personal characteristics other than behavior, such as social identities, can propagate threat and inhibit persuasion via negative emotional responding (Earl et al., 2015; Earl et al., 2016; Earl & Albarracín, 2007; Kessels et al., 2014). Moreover, this work supports the notion that relevance is not monolithic; rather, relevance can be signaled in several ways, and interpretations about why a message is relevant may elicit divergent outcomes. These studies also identify the importance of context cues (e.g., a shift in beliefs due to New Year's) in moderating the impact of relevance on persuasion. Specifically, the current studies suggest that changes in psychological states activated by the New Year's context, rather than the New Year's context itself, can directly impact recipients' responses to messages. Therefore, in addition to thinking about message receptivity solely as a function of the person, research on persuasion should also consider the contexts in which people receive messages and what the context may be signaling that can subsequently impact how people evaluate message content. Taken together, this work suggests that differences in perceived threat, interpretations of what relevance means, and context cues are important contributors to the heterogeneous effects of relevance.

Future work should also consider the role of identity centrality and goal strength. In the current studies, participants were not asked about the strength of their weight identities or goals. As such, it is possible that participants who were targeted on their identities were asked about demographic characteristics that may or may not be important to them. Furthermore, participants who were targeted on goals may have reported goals that were important to them or marked health goals that they otherwise would not self-generate if they had not been presented with a list of goals. Because identity centrality and goal strength both moderate the influence of identities and goals on behavior (Mann, de Ridder, & Fujita, 2013; Schmader, 2002; Sellers, Smith, Shelton, Rowley, & Chavous, 1998), future work should examine both identity and goal strength to determine how the importance of personal characteristics may moderate the effects observed in this work.

Furthermore, these studies identify a theoretical gap for understanding ways to increase relevance without simultaneously increasing threat. Future research should consider other contexts in which leveraging relevance based on identities may be beneficial. One possibility is to leverage identity theories, such as identity-based motivation, that directly address when and why people's identities impact their health behavior engagement. For instance, identity-based motivation posits that activation of social identities can influence the ways in which people interpret identity-specific goals, behavior, and experienced difficulties, subsequently increasing their engagement in behavior perceived to be congruent with their identities (Oyserman et al., 2007). As such, designing and disseminating health communication in ways that increase relevance, while also increasing perceived congruence of the target behavior for one's ingroup (e.g., messages where people with higher BMIs are portrayed as role models), may improve message receptivity among high-risk audiences.

In addition to contributing to the body of literature on persuasion and persuasive appeals, the current findings are consistent with stereotype threat. Stereotype threat has been examined across a broad range of contexts, and empirical work shows that in health contexts, stereotype threat can reduce intentions to engage in health behavior (e.g., eating healthy and exercising), increase heart rates, and impede physician-patient communication (Burgess, Warren, Phelan, Dovidio, & Van Ryn, 2010; Fingerhut & Abdou, 2017; Phelan et al., 2015; Seacat & Mickelson, 2009; Williams et al., 2017). Although the current studies did not directly test stereotype threat, it is possible that activating participants' weight identity and exposing them to stereotypes about obesity (e.g., excess weight is generally caused by poor dieting and exercise habits) facilitated negative responses that caused recipients to react in stereotype-consistent ways (e.g., disengaging from health behaviors). As such, this work identifies an example of a health provider behavior (information targeting) that may inadvertently elicit stereotype threat in health contexts.

This work also has important implications for health research; by identifying whether and why leveraging relevance on the basis of personal characteristics may backfire, these findings can (a) inform health interventions that employ relevance to motivate behavior change, and (b) provide insight into why some health behavior interventions that utilize relevance may fail to achieve their aims. Because this work tests our research questions using a real-world healthcare technique, information targeting, this work has several practical implications. Although information targeting is perceived to be beneficial by increasing health information accessibility for high-risk audiences in an efficient manner, these studies suggest that when members of marginalized groups feel targeted to receive threatening information, particularly due to their identity, perceiving relevance increases negative emotional responding that inhibits behavior uptake because they feel judged. Given these study findings, clinical and public health efforts should carefully consider the strategies used to disseminate (potentially stigmatizing) messages because they may inadvertently produce iatrogenic effects, particularly for high-risk audiences.

We tested our research questions in an online paradigm, which allowed us to use a conservative targeting manipulation in a context that inhibited external factors (e.g., physician appearance, previous physician-patient interactions) from influencing our findings. However, this paradigm lacks the external validity of a clinic setting. As such, future research should test these research questions with anthropomorphic measurements in actual clinic settings. Moreover, because this work does not identify the extent to which the current findings may generalize across information domains (e.g., sleep apnea or diabetes) or identities (e.g., race or sexual orientation), future work should examine the generalizability of these findings to other contexts.

4.3. Conclusion

Despite a large body of literature suggesting that relevance facilitates persuasion, these studies demonstrate that targeting information about obesity and obesity-related illness to recipients based on their social identity (weight status), health goals, or a combination of social identities and health goals, can produce negative outcomes through negative affect and feeling unfairly judged. Furthermore, these findings indicate a need to revisit the causes and consequences of perceiving relevance to better understand the boundary conditions under which relevance may backfire. Practical implications suggest that clinicians and health researchers should be mindful of the possible consequences associated with targeting information to high-risk audiences. By gaining a better understanding of the nuances associated with relevance, theoretical work can better inform behavioral health interventions and improve healthcare delivery for all.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jesp.2018.12.003.

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