

# Coping and Construal Level Matching Drives Health Message Effectiveness via Response Efficacy or Self-Efficacy Enhancement

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Five experiments examine the nature of different coping strategies and their subsequent effects on the effectiveness of health messages. We theorize that the two strategies of problem-focused versus emotion-focused coping are systematically associated with distinct construal levels (lower vs. higher), and thus messages cast at different levels of construal are differentially effective when a particular coping strategy is being activated. Specifically, we demonstrate that consumers primed with problem-focused strategies are more persuaded by messages presented at lower levels of construal, whereas consumers primed with emotion-focused strategies are more persuaded by messages presented at higher levels of construal. In addition, we posit that matching with each different type of coping strategy (problem-focused vs. emotion-focused coping) is driven by distinct types of efficacy processes. In particular, we demonstrate that the effects of a match with problem-focused coping are driven by self-efficacy, and the effects of a match with emotion-focused coping are driven by response efficacy. These findings make a significant contribution by building bridges between three theoretical traditions: coping, construal level, and efficacy in the context of health messaging.

*Keywords:* coping, construal level, self-efficacy, response efficacy, persuasion

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Health is an important goal for many consumers, and the pursuit of a healthy lifestyle can leave consumers feeling stressed and struggling to cope with failure (de Ridder, Kuijer, and Ouwehand 2007; Loewenstein 1996). For example, every January, consumers decide to lose weight, and over the course of the year, many feel stressed

when they overeat or fail to exercise. Obese Americans are more likely to experience stress than moderately overweight or average Americans (Gallup-Healthways Well-Being Index 2010). Communicating with consumers about health in ways that help them cope with their stress while making healthy choices more persuasive is also key to

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improving health outcomes. The current research shows that health messages are more effective when matched with particular coping strategies used by consumers.

Previous research describes two types of coping: problem-focused coping and emotion-focused coping (Lazarus and Folkman 1984). We propose that problem-focused coping activates thoughts about potential actions one can initiate in response to stress. We posit that these strategies result in a concrete and process-oriented mode of thinking emphasizing how to achieve one's objectives consistent with lower construal levels. In contrast, emotion-focused coping dwells on the emotional consequences of the situation and regulating the resulting emotions. These strategies result in more abstract and outcome-focused thinking consistent with higher construal levels. We extend this argument to health communications to assert that messages cast at construal levels that match the coping strategy (problem-focused coping and lower construal levels; emotion-focused coping and higher construal levels) are more persuasive.

We examine the process underlying this matching effect by documenting that matches with the two types of coping work via two different types of efficacy. Self-efficacy and response efficacy can be influenced by health messages and shape message compliance (Keller 2006). While the literature has focused most attention on self-efficacy, whereby consumers may follow a course of action because they believe they are able to do so, we also examine response efficacy, whereby individuals believe the actions themselves will be effective. We posit that matching between consumers' coping strategy and construal level of the health message will increase persuasion through two types of efficacy—a problem-focused coping match is driven by self-efficacy, whereas an emotion-focused coping match is driven by response efficacy.

Our research contributes to understanding the nature of coping strategies and how they shape persuasion. First, we show that the two types of coping strategies lead to different levels of construal. Depending on the coping strategy employed by the consumer, messages framed at different levels of construal are effective. This effect is new to both the construal level and coping literature because no nexus between these constructs has been drawn. Most interestingly, while previous research has examined the role of extent of efficacy, in particular self-efficacy (Sujan et al. 1999), we show that the two different types of efficacy mediate persuasion under different coping strategies (Keller 2006 provides an exception). Thus we integrate three theoretical traditions: coping, construal level, and efficacy in the context of health messaging.

Our research also contributes to the literature on matching effects in persuasion and its mechanisms (fluency [Lee, Keller, and Sternthal 2010; Mayer and Tormala 2010], involvement [Petty and Wegener 1998], and perceived self-efficacy [White, MacDonnell, and Dahl 2011]) by identifying new processes underlying matching effects. We

build on this work and identify two types of efficacy (self and response) as consequences of processing messages featuring different coping-construal level matches. Given the importance of efficacy in health decisions (Keller 2006), this form of matching holds promise for enhancing persuasion and yields a richer understanding of efficacy.

## THEORETICAL BACKGROUND: COPING AND CONSTRUAL LEVELS

### Consumer Coping Strategies and Health Messaging

Coping is active when individuals are confronted with health-related stressful situations or considerations (Agrawal and Wan 2009; Luce and Kahn 1999). To alleviate stress, consumers engage in a variety of coping strategies, which refers to the adaptive processes involving cognitive or behavioral *efforts* to reduce stress stemming from external and/or internal stressors (Lazarus and Folkman 1984). Individuals may cope with stress in a specific way depending on their personality or the situation (Lazarus and Folkman 1984). The type of coping strategy applied by a consumer varies by contexts (Miller, Kahn, and Luce 2008).

*Two Types of Coping Strategies.* People engage in two different types of coping strategies (Lazarus and Folkman 1984). Problem-focused coping is about directly addressing the source of stress. It entails action-oriented efforts such as listing possible ways to improve a stressful situation or thinking about how to handle one part of a problem at a time. Emotion-focused coping includes efforts to manage an individual's emotional responses to a cause of stress, such as avoiding thoughts about undesirable outcomes, letting negative emotions out to feel better, or reappraising the situation.

Previous research has examined how the use of specific coping strategies results in different coping outcomes. For example, Miller et al. (2008) found that the use of problem-focused (vs. emotion-focused) coping resulted in greater stress reduction only when participants were informed that they had to wait a long time before hearing stress-inducing feedback. Duhachek, Agrawal, and Han (2012) showed that a match between negative emotions and message frames activated different coping strategies. Although previous research has enriched our knowledge of the effects of specific coping strategies on related consumer outcomes, little is known about how the use of specific coping strategies will influence subsequent information processing or persuasion (Duhachek et al. 2012). This research proposes unique consequences resulting from reliance on either problem-focused or emotion-focused coping by integrating coping theory with construal level theory (CLT) (Trope and Liberman 2003, 2010).

CLT suggests that individuals may represent the same event, action, or information at lower levels of construal involving the feasibility considerations (e.g., means to an outcome; how to perform a given action) or higher levels of construal emphasizing its desirability aspects (e.g., the end state's value; why an action would be meaningful).

*Coping and Construal Levels: Problem-Focused Coping.* We propose that specific coping strategies are systematically associated with different construal levels. When using problem-focused coping, consumers tend to make detailed plans to address the problem (Duhachek 2008; Lazarus and Folkman 1984). Focusing on detailed actions or steps to address the stressor implies that their psychological distance from the source of stress may be proximal by approaching the source of stress directly. Due to this concrete and detailed approach, as well as their focus on closing in on the source of stress, consumers primed to employ problem-focused coping should adopt lower construal levels. Such concrete, how-to, and psychologically proximal representations characterize low-level construals (Trope and Liberman 2003; Trope, Liberman, and Wakslak 2007). Thus we posit that consumers primed to employ problem-focused coping will be more likely to adopt a lower-level construal.

*Coping and Construal Levels: Emotion-Focused Coping.* Consumers who engage in emotion-focused coping avoid thinking unpleasant thoughts regarding the outcome of a stressful situation. To feel better, they often distance themselves from the stressor and let their negative emotions out in another way (Duhachek 2008; Lazarus and Folkman 1984). In order to reappraise the stressful event, individuals coping in an emotion-focused way tend to dwell on why the stressor or its outcome may not be as unpleasant or consequential (Folkman and Moskowitz 2000; Holmes and Houston 1974). Emotion-focused coping works to diminish the stressor's emotional impact by seeing it in a broader context inclusive of other factors and by taking a more integrated view of the event. An outcome focus, as well as adopting an integrated perspective, are characteristics of higher-level construals (Trope and Liberman 2010). Also, previous research has shown that individuals who want to avoid negative emotions associated with issues like child labor choose not to seek out potentially negative details about ethical product attributes (Ehrich and Irwin 2005), implying that individuals using emotion-focused coping focus less on low construal levels. Focusing on desirable outcomes has been shown to result from the use of higher-level construals (Todorov, Goren, and Trope 2007). Put together, these findings suggest that individuals adopting emotion-focused coping mentally represent their coping at higher-level construals.

In sum, we propose that individuals primed to use problem-focused (vs. emotion-focused) coping will construe subsequent information at a lower (higher) level. Before

further developing our theory, we present a pilot test of this proposition.

*Pilot Study: Coping Strategies Activate Construal Levels.* A total of 114 undergraduate students at Indiana University were randomly allocated to one of three conditions (problem-focused coping vs. emotion-focused coping vs. control) in a between-subjects design. The procedure to prime the two coping strategies was adapted from Miller et al. (2008, study 2). The first task was described as a pretest for an evaluation of coping materials to be used for the elderly, but for which an undergraduate sample was necessary as a comparison group. The cover story stated that the psychology department was developing coping materials for health-related stress. A pretest with 86 respondents revealed that the cover story was effective to manipulate health-related stress (online appendix A lists the detailed pretest results). Participants in the control condition read part of an article about health from *Psychology Today*. After reading the cover story, participants were presented with either problem-focused or emotion-focused coping strategy (appendix A). In the problem-focused coping condition, participants were shown examples of problem-focused coping strategies (e.g., thinking about different ways to improve a situation, planning actions about how to deal with the stressful situation), whereas in the emotion-focused coping condition, they were shown examples of emotion-focused coping strategies (e.g., stopping or avoiding thinking about unpleasant thoughts regarding the stressful situation, letting negative emotions out somehow to feel better). After reading potential coping strategies, they were asked to write in detail about either problem- or emotion-focused coping strategies and to further elaborate on the benefits of the strategy in a way that could motivate others to use it. Participants in the control condition wrote what they usually do when they feel health stress.

Then participants completed a purportedly unrelated study run by the communication department examining what specific behaviors imply to individuals. Their construal level was measured using the 25-item Behavior Identification Form (BIF) questionnaire (Vallacher and Wegner 1989). For each item, participants read an action (e.g., making a list) and chose one of two options (e.g., writing something down [a low-level construal] vs. getting things organized [a high-level construal]) that best captured their view of the action. Participants' responses were scored as 0 for choosing lower levels of construal, and 1 for choosing higher levels of construal, and summed to form a BIF score. Finally, participants responded to demographic questions and a suspicion probe. None of them were aware of the hypothesis or indicated that the studies were related.

A one-way analysis of variance (ANOVA) on the BIF score showed a significant effect of coping ( $F(2, 111) = 10.02, p < .001$ ). Planned contrasts using Bonferroni

corrections showed that participants in the problem-focused coping condition scored significantly lower ( $M_{\text{prob}} = 12.84$ ,  $SD = 3.38$ ) than those in the emotion-focused coping condition ( $M_{\text{emo}} = 17.31$ ,  $SD = 4.47$ ;  $t(112) = -3.17$ ,  $p < .001$ ), supporting our theorizing that problem-focused coping leads to lower construal levels than emotion-focused coping. We also analyzed the data using the control condition. Participants in the emotion-focused coping condition ( $M_{\text{emo}} = 17.31$ ,  $SD = 4.47$ ) scored higher than those in the control condition ( $M_{\text{control}} = 14.93$ ,  $SD = 4.47$ ;  $t(112) = -2.17$ ,  $p < .049$ ), and participants in the problem-focused coping condition scored marginally significantly lower ( $M_{\text{prob}} = 12.84$ ,  $SD = 3.38$ ) than those in the control condition ( $M_{\text{control}} = 14.93$ ,  $SD = 4.77$ ;  $t(112) = -1.295$ ,  $p < .099$ ). These findings show that those in the problem-focused coping (vs. control) condition are more likely to construe objects at lower levels, whereas those in the emotion-focused coping (vs. control) condition are more likely to construe objects at higher levels of construal.

### Matching Coping with the Construal Level Enhances Persuasion

Previous research shows that messages are more persuasive when their construal level matches the mental representations triggered by consumers' psychological states (positive mood [Labroo and Patrick 2009]; regulatory focus [Lee et al. 2010]; or self-view [Spassova and Lee 2013]). However, this literature has not examined the role of stress and coping-based matching, as is done in the current research. As shown in the pilot study, problem-focused coping activates a low construal level mindset. Thus messages represented in a lower-level construal should be consistent with a problem-focused coping approach and hence more effective. In contrast, individuals primed to employ emotion-focused coping adopt higher construal levels. Health messages cast in higher construal levels should be more consistent with emotion-focused coping and more effective. Formally stated, when feeling health stress:

**H1:** Consumers primed to employ problem-focused coping will be more persuaded by health messages presented at lower (vs. higher) levels of construal.

**H2:** Consumers primed to employ emotion-focused coping will be more persuaded by health messages presented at higher (vs. lower) levels of construal.

### The Mediating Roles of Self-Efficacy and Response Efficacy in Health Persuasion

Prior research shows that a match leads to greater message compliance by making the message easier to process (Lee and Aaker 2004; Lee et al. 2010; White et al. 2011), more relevant (Petty and Wegener 1998; Wheeler, Petty,

and Bizer 2005), or feel right (Higgins 2000). Because the current research examines coping with health messages, and previous health research has shown efficacy as an important determinant of health persuasion (Keller 2006; Witte 1992), we examine changes in efficacy beliefs as new process drivers of matching effects. While efficacy (Bandura 1982; Rogers 1983; Stanley and Maddux 1986; Witte 1992) and coping (Folkman and Lazarus 1980; Forsythe and Compas 1987; Lazarus and Folkman 1984) bear roots in different literature, prior research hints that coping and efficacy together can influence stress-related outcomes (Duhachek et al. 2012; Sujan et al. 1999).

We build deeper links between these constructs by suggesting that coping-based matching will be driven by different types of efficacy. Examining efficacy allows us to investigate a process mechanism underlying matching that is not driven by changes in judgments or perceptions about the message (e.g., fluency or relevance). Instead, the current match systematically changes individuals' beliefs regarding their ability to follow actions suggested in ad messages (i.e., self-efficacy) or changes their beliefs about the effectiveness of those actions (i.e., response efficacy). White et al. (2011) showed that the effects of a match between message frame (i.e., gain or loss) and construal level mindset (i.e., abstract or concrete) on recycling intentions are mediated by processing fluency and perceived self-efficacy. We extend this theorizing and propose two distinct efficacy-based forms of persuasion matching. Thus we expose a distinct form of matching as well as reveal a more nuanced view of the efficacy construct (Bandura 1982; Choi, Krieger, and Hecht 2013; Wurtele and Maddux 1987).

We propose that this match between coping and the construal level of the message increases persuasion through enhancing different types of efficacy—self-efficacy, defined as “an individual's belief regarding his/her ability to perform the proposed actions [in the ads]” (Bandura 1982; Rogers 1983), or response efficacy, defined as “the degree to which an individual expects their response to the recommended actions to be effective” (Bandura 1982; Rogers 1983). For example, consumers looking to lose weight may decide to join a fitness club because they believe they have the ability to follow the club's programs (i.e., self-efficacy) or that the club's programs are particularly effective for weight loss (i.e., response efficacy).

First, we posit that a match between problem-focused coping and the low construal level of the health message leads individuals to feel greater self-efficacy (e.g., I can easily engage in the actions proposed in this ad), and consequently results in greater persuasion. Although not examining the relationship between problem-focused coping and self-efficacy directly, previous longitudinal studies on coping found that when individuals engage in problem-focused coping (i.e., mindfulness: approaching stressful situations mindfully by paying attention to the situations instead of automatically reacting to them), they feel greater

self-efficacy for subsequent coping behaviors (Caldwell et al. 2010). Carmody, Vieten, and Astin (2007) proposed that mindfulness is an approach-based coping strategy that includes attempts to overcome or directly confront the source of stress, which implies that mindfulness is best conceptualized as an example of problem-focused coping. Thus these findings suggest that individuals primed to use problem-focused coping may feel greater self-efficacy.

We further suggest that there may be links between construal levels and type of efficacy. Lower construal levels capture subordinate features of an event, such as action plans, whereas higher levels relate to superordinate features, such as outcomes (Gollwitzer and Brandstätter 1997; Sagristano, Trope, and Liberman 2002). Self-efficacy is related to one's ability to perform an action (i.e., feasibility), whereas response efficacy describes whether an action is effective at bringing about a preferred outcome (i.e., desirability). This characterization suggests that lower- (vs. higher) level construals are more likely to yield self- (vs. response) efficacy. If an individual knows that the efficacy of executing an action is high (i.e., high self-efficacy), one would still like to know how likely that action is to succeed (i.e., response efficacy) before one decides to take that course of action. In contrast, if one knows that an action is highly likely to succeed in getting a desired outcome (i.e., high response efficacy), one may decide to adopt it regardless of how easy or difficult it is to execute (i.e., self-efficacy). This asymmetry, argued to be at the heart of differentiating construal levels by Sagristano et al. (2002), suggests that self-efficacy is subordinate to response efficacy and is consistent with our theorizing that different construal levels activate different types of efficacy.

Specific to self-efficacy, we propose that the low construal level of the message will enhance self-efficacy because a low construal level message typically delineates *how* people can perform the proposed actions in the ad (Trope and Liberman 2003, 2010), making it easier for individuals to follow the actions suggested in the ad and consequently increasing their self-efficacy. For example, a fitness program ad framed at a low construal level will highlight daily workout plans in detail or lead people to think about how to perform healthy actions, helping people conclude they can easily follow the program (i.e., enhancing self-efficacy). Prior research suggests that providing detailed information about the means to achieve a desired end state bolsters self-efficacy (Keller 2006; Rogers 1983), and self-efficacy enhancement leads to greater persuasion (Choi et al. 2013; Keller 2006; Wurtele and Maddux 1987). Hence we predict hypothesis 3:

**H3:** Self-efficacy will mediate the effect of a match between problem-focused coping and the low construal level of the health message on persuasion.

In contrast, we argue that a match between emotion-focused coping and the higher construal level of the

message enhances consumers' beliefs about the effectiveness of the program (i.e., greater response efficacy) and thus leads to greater persuasion. First, we posit that individuals primed to use emotion-focused coping will activate greater response efficacy for the program or actions described in health messages. Individuals using emotion-focused coping perceive that they do not have the abilities to reduce stress successfully (Lazarus and Folkman 1984). Emotion-focused coping combats beliefs about one's lack of ability to address the stressful situation by placing faith in the efficacy outside of the self, in other means (e.g., response efficacy). Lazarus (1999) reported that when dealing with an undesirable medical diagnosis where the positive outcome was less likely, individuals coped by thinking that a treatment might be particularly effective (i.e., increasing response efficacy). Further supporting this link, situations that invoke emotion-focused coping led individuals to believe the treatments they used were highly efficacious for weight loss as compared to situations that invoked problem-focused coping (Chambliss and Murray 1979). Denial, a form of emotion-focused coping (Lazarus 1983), leads individuals to focus on desirable outcomes (Deaton 1986; Ownsworth 2005; Weller and Miller 1977). These findings suggest that emotion-focused coping might lead to greater response efficacy for the program in health ad messages.

As described earlier, CLT can help us build the link between response efficacy and higher levels of construal. Response efficacy (relative to self-efficacy) focuses on whether an action is effective at bringing about a desired outcome and not on whether one can perform that action. Hence higher construal levels emphasize the desired outcome and might lead one to focus on whether the action can make a desired outcome happen (i.e., on response efficacy). For example, a fitness program ad presented at a high level will emphasize desired end states, such as health. Providing information that increases outcome expectancies, or information that the advocated actions result in desired outcomes, should enhance response efficacy (Keller 2006; Rogers 1975, 1983), and response efficacy enhancement leads to greater persuasion (Choi et al. 2013; Keller 2006; Rogers 1983). Thus, hypothesis 4:

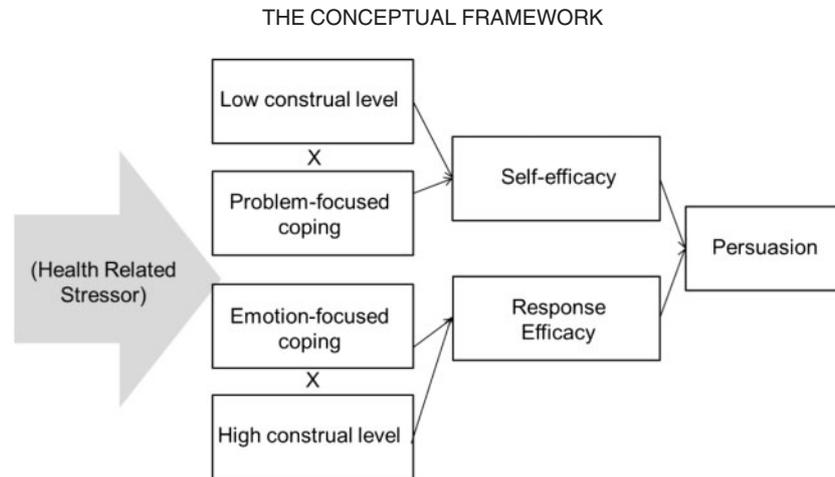
**H4:** Response efficacy will mediate an effect of a match between emotion-focused coping and the high construal level of the health messages on persuasion.

The preceding hypotheses and our theoretical model are described in figure 1.

## OVERVIEW OF STUDIES

Study 1 demonstrates the effect of a match between consumers' coping and the construal level of health messages on persuasion. Study 2 investigates these coping effects by measuring changes in cortisol level, a physiological measure of stress. The following studies provided support for

FIGURE 1



the underlying mechanism by testing the mediating role of self-efficacy and response efficacy using statistical (study 3) and experimental approaches (study 4). Before we present the main studies that empirically test our theoretical model (i.e., a match between coping and construal level results in greater persuasion via self-efficacy or response efficacy enhancement) depicted in figure 1, we note that we ran a pilot study to examine the key theorizing between coping and construal and two pretests to examine the key theorizing between coping and efficacy (online appendix B) and between construal and efficacy (online appendix C). First, as described earlier, the pilot study demonstrated that problem-focused (emotion-focused) coping activates lower (higher) construal levels. In addition, the results of two pretests revealed that problem-focused coping and low construal level increase self-efficacy, whereas emotion-focused coping and high construal level increase response efficacy. We now describe the four studies that test our hypotheses.

## STUDY 1

The objective of study 1 is to test the effect of a match between consumers' coping and the construal level of health messages on persuasion. We expect that participants primed to employ problem-focused coping will be more persuaded by health messages construed at a low level than by health messages construed at a high level, whereas the reverse pattern would be observed for those primed to engage in emotion-focused coping.

### Procedure

A total of 174 undergraduate students at Indiana University were randomly assigned to one of six conditions

in a 3 (coping: problem-focused vs. emotion-focused vs. control condition)  $\times$  2 (construal level of messages: high vs. low) between-subjects design. They were first informed that they would be taking part in two unrelated studies: a coping survey run by the health communication department followed by a marketing survey on health messages developed by the federal government.

First of all, participants were informed that the health communication department was interested in how people cope with stress when they failed to maintain their health goals. The coping manipulation was identical to the one used in the pilot study (appendix A). Participants in the control condition were asked to write down what they did yesterday. Participants then were informed that they were participating in a seemingly unrelated second study conducted by the federal government, and that the federal government was planning on running an educational program to help consumers engage in physical activities so they could keep in shape. Half of the participants were shown a high-level construal ad for the educational program regarding physical activities with the headline, "The Ultimate Educational Program for Being Healthy," followed by the subheading, "Why Do You Engage in Physical Activities in This Program?" The ad illustrated two benefits that emphasized high-level aspects of why one would participate in the educational program (appendix B). The remaining participants were shown a low-level construal ad with the headline, "The Ultimate Educational Program with the Right Features," followed by "How Do You Engage in Physical Activities in This Program?" The ad described concrete features of the educational program illustrating how physical activities in the program would be implemented (appendix B). The construal level manipulation was adapted from Lee et al. (2010). These ads were pre-tested ( $n = 96$ ) to correspond to high construal level versus

low construal level (online appendix D provides item descriptions and online appendix E provides the pretest results). Participants were then asked to evaluate the educational program on four 9 point items ( $\alpha = .91$ ) anchored by bad/good, negative/good, against/in favor, and unfavorable/favorable, as used by Mayer and Tormala (2010). Finally, they responded to demographic questions and then were debriefed and thanked. Suspicion measures indicated that no participants believed the two studies were related.

## Results and Discussion

With respect to attitude toward the educational program, a two-way ANOVA showed that the effects of coping ( $F(2, 168) = .83, p > .44$ ) and of construal levels were not significant ( $F(1, 168) = .02, p > .88$ ). A coping by construal level interaction was significant ( $F(2, 168) = 10.05, p < .001$ ). Follow-up contrasts indicated that participants in the problem-focused coping condition were more persuaded (i.e., more favorable attitude toward the program) when they were exposed to the ad message that contained the low-(vs. high) level construal attributes of the program ( $M_{\text{prob\_high-CL}} = 6.07, SD = 1.13$  vs.  $M_{\text{prob\_low-CL}} = 7.29, SD = 1.23; F(1, 168) = 10.46, p < .001$ ), supporting hypothesis 1. In contrast, participants in the emotion-focused coping condition were more persuaded when they were exposed to the ad message that contained the high-(vs. low) level construal attributes of the program ( $M_{\text{emo\_high-CL}} = 7.37, SD = 1.25$  vs.  $M_{\text{emo\_low-CL}} = 6.19, SD = 1.22; F(1, 168) = 9.65, p < .002$ ), supporting hypothesis 2. For participants in the control condition, there was no difference between the low- and high-level construal conditions ( $M_{\text{control\_high-CL}} = 6.42, SD = 1.65$  vs.  $M_{\text{control\_low-CL}} = 6.48, SD = 1.76; F(1, 168) = .03, p > .86$ ).

The results after applying Bonferroni corrections also indicated that within the low construal level condition ( $F(2, 168) = 4.70, p < .01$ ), participants primed with problem-focused coping were significantly more persuaded by the ad message than those in the emotion-focused coping condition ( $t(169) = -2.31, p < .011$ ) in support of hypothesis 1. In addition, participants primed with problem-focused coping were marginally significantly more persuaded by the ad message than those in the control condition ( $t(169) = -1.39, p < .083$ ). There was no difference between the control and emotion-focused coping condition ( $p > .99$ ). This pattern reversed in the high construal level condition ( $F(2, 168) = 6.27, p < .002$ ), such that participants primed with emotion-focused coping were more persuaded by the ad message than those in the problem-focused coping condition ( $t(169) = -2.78, p < .003$ ), supporting hypothesis 2. Moreover, participants in the emotion-focused coping condition were more persuaded by the ad message than those in the control condition ( $t(169) = -1.88, p < .031$ ). There was no difference between the control and problem-focused coping condition

( $p > .99$ ). These results provide additional evidence of our prediction that matching coping strategies and the construal level of the ad message leads to greater persuasion than merely differentiating the construal level of the ad message.

## STUDY 2

The objectives of study 2 are to replicate the findings in study 1 and examine whether the proposed effects of coping and construal level will impact physiological stress reduction. That is, we test whether the match between coping and construal level will help consumers reduce stress levels, by measuring cortisol responses. Cortisol responses have been shown to be an accurate measure of stress levels felt by individuals because psychological stressors increase cortisol responses in the body (Dickerson and Kemeny 2004). Previous research has shown that the effectiveness of coping strategies on stress reduction is enhanced when managers use the marketing strategy that matches individuals' coping orientation (Miller et al. 2008). For example, Miller et al. (2008) found that participants using an avoidance-oriented coping strategy (a form of emotion-focused coping) felt less stressed when marketers shortened the wait times in the negative service environment. Building on this finding, we expect that when participants primed with problem-focused coping are shown a low- (vs. high-) level construal message that matches their primed coping, they will feel less stressed (i.e., elicit less cortisol response). In contrast, we expect that when participants primed with emotion-focused coping are exposed to a high-(vs. low-) level construal message that matches their activated coping, they will feel less stressed (i.e., elicit less cortisol response).

## Procedure

A total of 94 undergraduate students at McGill University took part in the study and were paid CAD10.00 for their participation. Participants were randomly assigned to one of four conditions in a 2 (coping: problem-focused vs. emotion-focused)  $\times$  2 (construal level of messages: high vs. low) between-subjects design. They were first informed that they would be taking part in two unrelated studies: one conducted by the psychology department, interested in measuring college students' stress levels and how they manage their stress, followed by a marketing survey on ad messages developed by a marketing firm.

First, we measured participants' baseline cortisol level to establish an initial baseline by following the procedure found in previous literature (Khalifa et al. 2003; Matheson and Cole 2004). When participants arrived in the behavioral lab and were seated, they were given a tube and a straw. Participants were instructed to pool the saliva in their mouth and drool through the straw to collect saliva in

the tube. They were asked to repeat this process until they collected approximately 2 ml of saliva. Once participants collected their first saliva sample, they were asked to move on to the next task. They were informed that the psychology department was interested in how individuals recall a past stressful event involving a health goal. A pretest with 86 respondents revealed that the health stress manipulation was effective to increase health-related stress (online appendix A provides the detailed pretest results). After the health stress manipulation, participants were given the tube and the straw and asked to collect their second saliva samples as they did when they provided their baseline saliva samples. Next, participants were told that the psychology department was interested in developing different coping strategies to help individuals manage stress. As used in previous studies, we manipulated problem- and emotion-focused coping by adopting the method used by Miller et al. (2008; appendix A).

Participants then were informed that they were participating in a seemingly unrelated second study conducted by a local fitness club interested in obtaining feedback regarding a possible ad campaign. The construal level manipulation was adapted from Lee et al. (2010). Specifically, participants in the high construal level ad condition were shown an ad for the fitness club with the headline “The Ultimate Fitness Club for a Great Workout!” followed by the subhead “Why Exercise?” The ad illustrated two benefits that emphasized high-level aspects of why one would sign up for the fitness program (appendix C). Participants in the low construal level ad condition were shown an ad with the headline “The Ultimate Fitness Club for a Great Workout!” followed by “How to Exercise?” The ad described concrete features of the fitness program illustrating how this program would be implemented (appendix C). These ads were pretested ( $n = 86$ ) to correspond to high construal level versus low construal level (online appendix D provides item descriptions and online appendix E provides the pretest results).

Participants were then asked to indicate their intention to join the fitness program on two 9 point items ( $r = .90$ ; “How likely would you be to join this fitness program/sign up for this fitness program?”) anchored by “Not at all (1)” and “Very likely (9).” Next, participants were given the tube and straw and were asked to collect their saliva samples. Finally, they answered demographic and suspicion questions and were debriefed and thanked. Suspicion measures revealed that no participants believed the two studies were related. To comply with the rules governed by the Research Ethics Office at McGill University, after participants were debriefed, they were asked to choose whether they wanted to remain in the study or not. Since eight among 94 participants did not want to remain in the study (e.g., they did not want to provide their responses and saliva samples), we had to destroy their responses and saliva samples immediately, resulting in 86 participants in total.

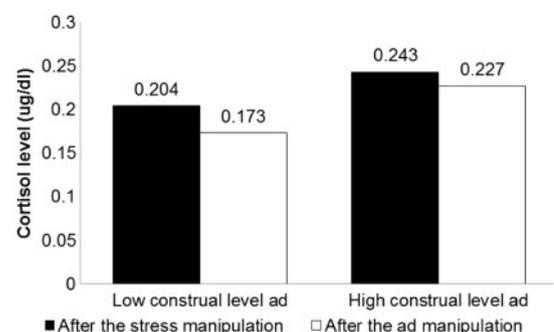
## Results and Discussion

**Cortisol Responses.** The saliva samples were frozen and sent to a major commercial lab for analyses. The lab was blind to the research hypotheses. Upon receipt of the results, we conducted the repeated-measures ANOVA, with coping and construal level as between-subject factors, cortisol level across different times (i.e., cortisol level after the stress manipulation and cortisol level after the ad manipulation) as a within-subject factor, and with the baseline cortisol level as a covariate. The results revealed a marginally significant three-way interaction ( $F(1, 81) = 3.50$ ,  $p = .065$ ) and a significant cortisol level across different times (i.e., within-subject factor) by baseline cortisol level interaction ( $F(1, 81) = 10.04$ ,  $p = .002$  (online appendix F provides the descriptive statistics). None of the other effects were significant ( $p$ 's  $> .80$ ). Follow-up contrasts indicated that among participants in the problem-focused coping condition, seeing a low construal level ad, significantly reduced their cortisol level ( $M_{\text{after\_the\_stress\_manipulation}} = .204$  ug/dl,  $SD = .154$  vs.  $M_{\text{after\_the\_ad\_manipulation}} = .173$  ug/dl,  $SD = .105$ ;  $F(1, 81) = 8.45$ ,  $p = .005$ ). However, among participants in the problem-focused coping condition shown the high construal level ad, there was no change in the cortisol levels ( $M_{\text{after\_the\_stress\_manipulation}} = .243$  ug/dl,  $SD = .079$  vs.  $M_{\text{after\_ad\_manipulations}} = .228$  ug/dl,  $SD = .074$ ;  $F(1, 81) = .98$ ,  $p = .33$ ; figure 2).

Next, among participants in the emotion-focused coping condition, seeing a high construal level ad significantly reduced their cortisol levels ( $M_{\text{after\_the\_stress\_manipulation}} = .187$  ug/dl,  $SD = .093$  vs.  $M_{\text{after\_the\_ad\_manipulation}} = .165$  ug/dl,  $SD = .084$ ;  $F(1, 81) = 6.34$ ,  $p = .014$ ). However, among participants in the emotion-focused coping condition, when they were shown the low construal level ad, there was no change in the cortisol levels ( $M_{\text{after\_the\_stress\_manipulation}} = .229$  ug/dl,  $SD = .092$  vs.  $M_{\text{after\_the\_ad\_manipulations}} = .217$  ug/dl,  $SD = .112$ ;  $F(1, 81) = .80$ ,  $p = .37$ ; figure 3).

FIGURE 2

STUDY 2 RESULTS: CORTISOL LEVEL CHANGES IN THE PROBLEM-FOCUSED COPING CONDITION



*Intent to Join the Health Club.* A two-way ANOVA showed that the effects of coping ( $F(1, 82) = .004, p > .95$ ) and of construal levels were not significant ( $F(1, 82) = .11, p > .74$ ). A coping by construal level interaction was significant ( $F(1, 82) = 8.20, p < .005$ ). Follow-up contrasts indicated that participants in the problem-focused coping condition showed marginally significantly greater intentions to join the fitness program when they were shown the low (vs. high) construal level ad message ( $M_{\text{prob\_high-CL}} = 2.48, SD = 1.29$  vs.  $M_{\text{prob\_low-CL}} = 3.40, SD = 2.29$ ;  $F(1, 82) = 3.13, p = .080$ ), replicating the pattern of the results in study 1 although the difference was marginally significant. In contrast, participants in the emotion-focused coping condition showed significantly greater intentions to join the fitness program when they were shown the high (vs. low) construal level ad message ( $M_{\text{emo\_high-CL}} = 3.50, SD = 1.69$  vs.  $M_{\text{emo\_low-CL}} = 2.33, SD = 1.40$ ;  $F(1, 82) = 5.22, p < .025$ ), supporting hypothesis 2.

The findings of study 2 replicated the findings in study 1 and provided further empirical evidence in support of the proposed matching effects by investigating the physiological outcome (i.e., cortisol level) associated with stress reduction. As predicted, a match between problem-focused (emotion-focused) coping and a low (high) construal level of the ad message results in greater persuasion and stress reduction. These findings are important because they show the ad message that matches consumers' coping leads to actual positive health outcomes by reducing the physiological response to stress in the body. However, we would like to acknowledge that for the cortisol responses, the three-way interaction between coping, construal, and cortisol level across different times was marginally significant. This result was unexpected but we expect that increasing the sample size might address this issue. Future research could examine this possibility.

In study 3, we examine the proposed efficacy processes through which these matching effects occur. That is, in study 3, we examine whether self-efficacy or response

efficacy mediates the effects of a match between consumers' coping and the construal level of the health message on persuasion as we hypothesized. An additional goal of study 3 is to implicate the key role of health-related stress in our model. Our theorizing holds that only health-related stress should lead to the proposed matching effects. Other forms of stress do not produce matching, as the coping processes used in one domain can be independent of coping processes used in another, based on appraisals of stress relevance (Lazarus and Folkman 1984).

### STUDY 3

We expect the coping and construal matching effects observed previously will be found only in the situation where consumers feel stressed about maintaining their health goals (not in the control situation where consumers do not feel stressed or in the situation where consumers feel stressed about a non-health-related career goal) because previous research has demonstrated that coping is activated when consumers feel a certain level of stress and appraise a stressful situation as relevant, thereby producing matching (Lazarus and Folkman 1984). In the no stress control situation, we expect that the effect of a match between coping and health messages construed at different levels will be diluted because consumers do not feel stressed about their health, and thus coping is not linked to their processing of the health message. In the career-related stress condition, we expect that the effect of the match between coping and health messages construed at different levels will be attenuated because consumers will not link their career-related stress with the health message and thus not mobilize coping resources in response. This study allows for the testing of the first link in the conceptual model in figure 1 predicting health stress leads to matching. In addition, in this study, we measured self-efficacy and response efficacy to test their mediating role.

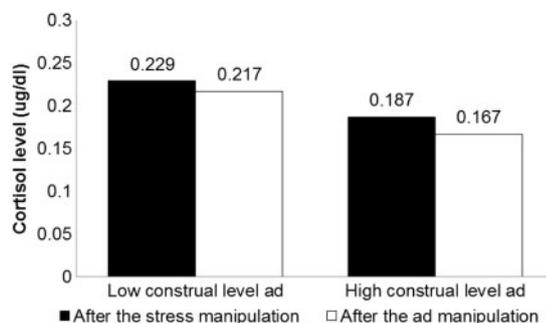
### Procedure

A total of 608 respondents from an online panel via Mechanical Turk (MTurk) completed the study in exchange for a small payment. They were randomly assigned to one of 12 conditions in a 3 (stress: no stress vs. health-related stress vs. career goal related stress)  $\times$  2 (coping: problem-focused vs. emotion-focused)  $\times$  2 (construal level of messages: high vs. low) between-subjects design. Participants were first told that they were taking part in three unrelated studies: two conducted by the psychology department followed by a marketing survey on health messages developed by a marketing firm.

First, we induced the health stress, career stress, or no stress control condition. Participants in the health-related stress condition were informed that the psychology department was interested in how people recall a past event where they felt stressed due to attempting to pursue a

FIGURE 3

STUDY 2 RESULTS: CORTISOL LEVEL CHANGES IN THE EMOTION-FOCUSED COPING CONDITION



health goal, as used in study 2. Participants in the career goal related stress were asked to recall a past event where they felt stressed due to pursuing a career goal. Participants in the control condition were asked to recall what they did yesterday. Next, we manipulated different coping strategies. The procedure of the coping manipulation was identical to that of study 2 (appendix A). Next, we manipulated construal levels in ad messages regarding a fitness club by using the ad messages used in study 2 (appendix C). Specifically, participants were informed that they would be taking part in a seemingly unrelated third study conducted by a local fitness club interested in obtaining feedback regarding a possible ad campaign.

After seeing the ad, participants were asked to indicate their intention to join the fitness program on two 9 point items ( $r = .96$ ; "How likely would you be to join this fitness program/sign up for this fitness program?") anchored by "Not at all (1)" and "Very likely (9)." Next, participants were asked to answer questions measuring self-efficacy and response efficacy. The measures of self-efficacy

and response efficacy were adopted from Keller (2006). Self-efficacy was measured using five 9 point items ( $\alpha = .93$ ), and response efficacy was measured with four 9 point items ( $\alpha = .89$ ), anchored by "Not at all (1)" and "Very much (9)" (online appendix D provides item descriptions). Finally, they answered demographic questions and were debriefed and thanked. Suspicion measures revealed that no participants believed the three studies were related.

## Results and Discussion

*Intent to Join the Health Club.* An ANOVA revealed a significant coping by construal by stress type three-way interaction ( $F(2, 596) = 3.65, p < .027$ ). The stress type by coping interaction was significant ( $F(2, 596) = 4.16, p < .016$ ) and the coping by construal interaction was significant ( $F(1, 596) = 4.38, p < .037$ ). None of the other effects were significant ( $p$ 's  $> .24$ ). Consistent with predictions, only findings in the health-related stress condition replicated the findings in the previous studies (table 1). Specifically, in

TABLE 1

STUDY 3 RESULTS: PROBLEM-FOCUSED COPING MATCHES WITH THE LOW CONSTRUAL LEVEL MESSAGE, AND EMOTION-FOCUSED COPING MATCHES WITH THE HIGH CONSTRUAL LEVEL MESSAGE ONLY IN THE HEALTH-RELATED STRESS CONDITION

In the health-related stress condition				
Independent variables	Coping			
	Problem-focused coping		Emotion-focused coping	
Construal level of the ad	High	Low	High	Low
Dependent measures				
Intent to join the health club	3.32 (2.35) <sup>a</sup>	4.43 (2.42) <sup>b</sup>	4.07 (2.34) <sup>a</sup>	2.93 (2.20) <sup>b</sup>
Self-efficacy	4.27 (2.40) <sup>a</sup>	5.30 (1.89) <sup>b</sup>	4.72 (2.10)	4.21 (1.86)
Response efficacy	4.72 (2.18)	5.24 (1.70)	5.71 (1.57) <sup>a</sup>	4.64 (1.97) <sup>b</sup>
In the no stress condition				
Independent variables	Coping			
	Problem-focused coping		Emotion-focused coping	
Construal level of the ad	High	Low	High	Low
Dependent measures				
Intent to join the health club	3.73 (2.37)	3.74 (2.69)	3.19 (2.27)	2.74 (1.86)
Self-efficacy	4.78 (1.84)	4.80 (2.02)	4.58 (1.79)	4.47 (2.11)
Response efficacy	4.93 (1.76)	5.34 (1.76)	4.67 (1.87)	4.78 (2.00)
In the career goal related stress condition				
Independent variables	Coping			
	Problem-focused coping		Emotion-focused coping	
Construal level of the ad	High	Low	High	Low
Dependent measures				
Intent to join the health club	3.53 (2.30)	2.93 (2.25)	3.95 (2.63)	3.63 (2.59)
Self-efficacy	4.95 (1.88)	4.50 (1.93)	5.03 (1.92)	5.05 (2.15)
Response efficacy	5.33 (1.87)	4.96 (1.84)	5.39 (1.48)	5.28 (1.86)

<sup>a,b</sup>: The differences between two means were significant ( $p$ 's  $< .05$ ).

the health-related stress condition, follow-up contrasts showed that participants in the problem-focused coping condition indicated greater intentions to join the fitness club when they were shown the ad message construed at a low level than the ad message construed at a high level ( $M_{\text{prob\_high-CL}} = 3.32$ ,  $SD = 2.35$  vs.  $M_{\text{prob\_low-CL}} = 4.43$ ,  $SD = 2.42$ ;  $F(1, 596) = 5.17$ ,  $p < .023$ ). In contrast, participants in the emotion-focused coping condition showed significantly greater intentions to join the fitness club when they were exposed to the ad message that contained high-level construal attributes of the program than the ad message that contained low-level construal attributes of the program ( $M_{\text{emo\_high-CL}} = 4.07$ ,  $SD = 2.34$  vs.  $M_{\text{emo\_low-CL}} = 2.93$ ,  $SD = 2.20$ ;  $F(1, 596) = 5.74$ ,  $p < .017$ ). None of the contrasts were significant in the no stress condition (in the problem-focused coping condition:  $F(1, 596) = .001$ ,  $p > .97$ ; in the emotion-focused coping condition:  $F(1, 596) = .95$ ,  $p > .33$ ) and career goal-related stress (in the problem-focused coping condition:  $F(1, 596) = 1.48$ ,  $p > .22$ ; in the emotion-focused coping condition:  $F(1, 596) = .45$ ,  $p > .50$ ) conditions.

*Self-Efficacy Results.* Next, we examine self-efficacy resulting from the match between problem-focused coping and low construal level of the message on persuasion as a function of stress type. We first performed an ANOVA on self-efficacy and found a significant coping by construal by stress type three-way interaction ( $F(2, 596) = 3.22$ ,  $p < .041$ ). None of the other effects were significant ( $p$ 's  $> .21$ ). Consistent with predictions, only results in the health stress condition replicated our previous findings. In the health-related stress condition, the follow-up contrasts revealed that participants in the problem-focused coping condition felt more self-efficacy when they were shown a low- (vs. high-) construal level message ( $M_{\text{prob\_high-CL}} = 4.27$ ,  $SD = 2.40$  vs.  $M_{\text{prob\_low-CL}} = 5.30$ ,  $SD = 1.89$ ;  $F(1, 596) = 6.40$ ,  $p < .012$ ). In contrast, and as predicted, for participants in the emotion-focused coping condition, there was no difference in self-efficacy score between high and low construal level conditions ( $M_{\text{emo\_high-CL}} = 4.72$ ,  $SD = 2.10$  vs.  $M_{\text{emo\_low-CL}} = 4.21$ ,  $SD = 1.86$ ;  $F(1, 596) = 1.58$ ,  $p > .21$ ). In the no stress condition, none of the contrasts were significant (in the problem-focused coping condition:  $F(1, 596) = .003$ ,  $p > .96$ ; in the emotion-focused coping condition:  $F(1, 596) = .10$ ,  $p > .76$ ; table 1). In the career goal-related stress condition, none of the contrasts were significant (in the problem-focused coping condition:  $F(1, 596) = 1.17$ ,  $p > .28$ ; in the emotion-focused coping condition:  $F(1, 596) = .001$ ,  $p > .97$ ; table 1).

*Response Efficacy Results.* Next, we tested response efficacy resulting from the match between emotion-focused coping and high construal level of the message on persuasion as a function of the type of stress induced. An ANOVA on the response efficacy score showed a significant three-way interaction ( $F(2, 596) = 3.28$ ,  $p < .038$ ) and a

marginally significant coping by construal interaction ( $F(1, 596) = 3.33$ ,  $p = .068$ ). None of the other effects were significant ( $p$ 's  $> .15$ ), and the results show that the predicted matching occurs only in the health stress condition. In the health-related stress condition, participants in the emotion-focused coping condition showed greater response efficacy when they were shown the high (vs. low-) construal level message ( $M_{\text{emo\_high-CL}} = 5.71$ ,  $SD = 1.57$  vs.  $M_{\text{emo\_low-CL}} = 4.64$ ,  $SD = 1.97$ ;  $F(1, 596) = 8.46$ ,  $p < .004$ ). In line with predictions, participants in the problem-focused coping condition did not show differences on the response efficacy scores between the high and low construal level of the message conditions ( $M_{\text{prob\_high-CL}} = 4.72$ ,  $SD = 2.18$  vs.  $M_{\text{prob\_low-CL}} = 5.24$ ,  $SD = 1.70$ ;  $F(1, 596) = 1.95$ ,  $p > .16$ ). In the no stress condition, none of the contrasts were significant (in the problem-focused coping condition:  $F(1, 596) = 1.43$ ,  $p > .23$ ; in the emotion-focused coping condition:  $F(1, 596) = .094$ ,  $p > .76$ ; table 1). In the career goal-related stress condition, none of the contrasts were significant (in the problem-focused coping condition:  $F(1, 596) = .97$ ,  $p > .33$ ; in the emotion-focused coping condition:  $F(1, 596) = .083$ ,  $p > .77$ ; table 1).

#### *Self-Efficacy and Response Efficacy as Mediators.*

Because we only found the proposed effects in the health-related stress condition, we tested the mediating role of self-efficacy and response efficacy in this condition ( $n = 194$ ). Specifically, we ran the moderated mediation model using a bootstrapping procedure described by Preacher, Rucker, and Hayes (2007). We used model 8 of the PROCESS macro by Hayes (2013). This approach includes procedures that compute a 95% confidence interval (CI) around the indirect effect (i.e., the interactive effect of coping and construal level on persuasion via self-efficacy and response efficacy as two parallel mediators). If a CI does not include zero, it indicates mediation. Regarding self-efficacy, results revealed that in the problem-focused coping condition, the CI ranged from  $-.461$  to  $-.003$ , whereas in the emotion-focused coping condition, the CI ranged from  $-.055$  to  $.316$ , providing evidence that self-efficacy mediated the interactive effect of coping and construal level on persuasion only in the problem-focused coping condition. Regarding response efficacy, results revealed that in the emotion-focused coping condition, the CI ranged from  $.158$  to  $.86$ , whereas in the problem-focused coping condition, the CI ranged from  $-.604$  to  $.147$ , providing evidence that response efficacy mediated the interactive effect of coping and construal level on persuasion only in the emotion-focused coping condition. Finally, for self-efficacy, the CI of the indirect effect of the highest order interaction in the entire sample did not include zero (CI:  $-.656$  to  $-.018$ ). For response efficacy, the CI of the indirect effect of the highest order interaction in the entire sample did not include zero (CI:  $-1.26$  to  $-.203$ ).

The findings of study 3 provided further empirical evidence that supports the proposed matching effects and underlying processes through which a match between coping strategies and construal levels affects persuasion. As predicted, a match between problem-focused coping and low construal level of the ad message influences persuasion via self-efficacy enhancement, whereas a match between emotion-focused coping and high construal level of the ad message results in greater message compliance via response efficacy enhancement. These findings are important because they shed light on two new mediators, self-efficacy and response efficacy, that have not been tested in the match-driven persuasion literature. In addition, consistent with our theorizing, the matching effects of coping and construal level on the effectiveness of health messages were observed only when consumers felt stressed about maintaining health goals, not when they did not feel stressed or when they felt stressed from a different source, such as a career goal. This finding is consistent with previous research on coping, which suggests that individuals employ coping strategies when the particular stressor is activated (Lazarus and Folkman 1984), and with previous research on coping that shows the effectiveness of coping strategies is enhanced when individuals are exposed to marketing stimuli that match their activated coping strategy (Miller et al. 2008).

## STUDY 4

The objective of study 4 is to examine the mediating role of different types of efficacy using a moderation approach (Spencer, Zanna, and Fong 2005) to complement the mediation approach used in study 3. In study 3, we measured self-efficacy and response efficacy and tested the mediating role. In study 4, we manipulate self-efficacy and response efficacy using ads so as to enable managers with actionable tactics to encourage healthy behavior. We expect that participants primed with problem-focused coping will show greater message compliance when they are shown a low-level construal message paired with self-efficacy (vs. response efficacy) ad claims. In contrast, we expect that participants primed with emotion-focused coping will show greater message compliance when they are shown a high-level construal message paired with response efficacy (vs. self-efficacy) ad claims.

## Procedure

A total of 609 respondents from an online panel via MTurk completed the study in exchange for a small payment. Participants were randomly assigned to one of 12 conditions (2 (coping: problem-focused vs. emotion-focused)  $\times$  2 (construal: high vs. low)  $\times$  3 (efficacy: self-efficacy vs. response efficacy vs. control). They were informed that they would be participating in three unrelated studies. In the first study, we manipulated the health-related stress via a writing task, as in study 3. In the second task, we manipulated coping via a writing task, as in study 2. After completing the second task, participants were told that the unrelated third study was conducted by the marketing department. We manipulated the construal level by adopting the method used by Lee et al. (2010; asking “why” vs. “how” questions in the high vs. low construal level conditions, respectively) in a sunscreen ad. We manipulated different types of efficacy by adopting the method used by Keller (2006; appendix D). Specifically, in the response efficacy ad condition, participants were presented with a health message emphasizing the effectiveness of sunscreen, whereas in the self-efficacy condition, participants were presented with a health message highlighting that they can easily use sunscreen. After seeing the ad, participants indicated their purchase intentions on four 9 point items ( $\alpha = .88$ ) adopted from Keller (2006; online appendix D provides item descriptions). Finally, they answered demographic questions and were debriefed and thanked.

## Results and Discussion

*Purchase Intentions.* The results indicated that a three-way interaction was significant ( $F(2, 597) = 3.029, p < .049$ ). The coping by construal level interaction was significant ( $F(1, 597) = 5.76, p < .017$ ), the coping by efficacy interaction was significant ( $F(2, 597) = 6.70, p < .001$ ), and the construal by efficacy interaction was significant ( $F(2, 597) = 8.39, p < .001$ ). The main effect of efficacy was significant ( $F(2, 597) = 3.42, p < .033$ ). None of other effects were significant ( $p$ 's  $> .30$ ). Follow-up contrasts using the Bonferroni corrections to investigate the three-way interaction (table 2) indicated that among participants in the problem-focused coping condition, when they were shown the low construal level ad ( $F(2,$

TABLE 2

STUDY 4 RESULTS: THE EFFECT OF COPING, CONSTRUAL, AND EFFICACY ON PURCHASE INTENTIONS

Dependent variable: Purchase intentions		Self-efficacy level ad	Response efficacy ad	Control (no efficacy) ad
Coping	Construal level ad			
	Problem-focused			
	High	5.81 (2.20)	5.78 (2.37)	4.96 (2.41)
	Low	6.87 (1.95) <sup>b</sup>	5.13 (2.66) <sup>a</sup>	6.00 (2.52)
Emotion-focused	High	5.31 (2.50) <sup>a</sup>	7.01 (1.41) <sup>b</sup>	6.11 (2.31)
	Low	6.24 (1.93)	6.01 (1.96)	5.01 (2.25)

<sup>a,b</sup>: The differences between two means were significant within each coping condition ( $p$ 's  $< .05$ ).

597) = 8.22,  $p < .001$ ), participants in the self-efficacy ad condition showed greater purchase intentions than those in the response efficacy ad condition ( $M_{\text{self\_efficacy\_ad}} = 6.87$ ,  $SD = 1.95$  vs.  $M_{\text{response\_efficacy\_ad}} = 5.13$ ,  $SD = 2.66$ ;  $t(598) = -3.10$ ,  $p < .001$ ). Participants in the self-efficacy ad condition ( $M_{\text{self\_efficacy\_ad}} = 6.87$ ,  $SD = 1.95$ ) directionally showed greater purchase intentions than those in the control condition, but the difference was not significant ( $M_{\text{control\_efficacy\_ad}} = 6.00$ ,  $SD = 2.52$ ;  $t(598) = -1.10$ ,  $p = .135$ ). When participants who were in the problem-focused coping condition were shown the high construal level ads, the difference between three efficacy conditions was not significant ( $F(2, 597) = 2.12$ ,  $p > .12$ ).

In contrast, we found that among participants in the emotion-focused coping condition, when they were shown the high construal level ad ( $F(2, 597) = 7.99$ ,  $p < .001$ ), participants in the response efficacy ad condition showed greater purchase intentions than those in the self-efficacy ad condition after applying Bonferroni corrections ( $M_{\text{self\_efficacy\_ad}} = 5.31$ ,  $SD = 2.50$  vs.  $M_{\text{response\_efficacy\_ad}} = 7.01$ ,  $SD = 1.41$ ;  $t(598) = -3.10$ ,  $p < .001$ ). Participants in the response efficacy ad condition ( $M_{\text{response\_efficacy\_ad}} = 7.01$ ,  $SD = 1.41$ ) directionally showed greater intentions than those in the control condition, but the difference was not significant ( $M_{\text{control\_efficacy\_ad}} = 6.11$ ,  $SD = 2.31$ ;  $t(598) = -1.23$ ,  $p = .11$ ). When participants who were in the emotion-focused coping condition were shown the low construal level ads ( $F(2, 597) = 4.16$ ,  $p < .016$ ), participants in the control condition ( $M_{\text{control\_efficacy\_ad}} = 5.01$ ,  $SD = 2.25$ ) showed less purchase intention than those in the self-efficacy condition ( $M_{\text{self\_efficacy\_ad}} = 6.24$ ,  $SD = 1.93$ ;  $t(598) = -2.06$ ,  $p < .02$ ) and marginally significantly less purchase intention than those in the response efficacy condition ( $M_{\text{response\_efficacy\_ad}} = 6.01$ ,  $SD = 1.96$ ;  $t(598) = -1.33$ ,  $p = .092$ ).

The results of study 4 provided further empirical evidence of the proposed mediating role of self-efficacy and response efficacy in the relationship between coping and construal level. As predicted, participants primed with problem-focused coping showed greater message compliance when they were shown a low-level construal message paired with self-efficacy (vs. response efficacy) ad claims. In contrast, participants primed with emotion-focused coping indicated greater message compliance when they were shown a high-level construal message paired with response efficacy (vs. self-efficacy) ad messages. However, in the problem-focused coping and low construal level ad condition, the self-efficacy ad resulted in greater persuasion than the control ad directionally, but the difference was not significant. Also, in the emotion-focused coping and high construal level ad condition, the response efficacy ad resulted in greater persuasion than the control ad directionally, but the difference was not significant. These results were unexpected, but one potential explanation is that the self-efficacy (response efficacy) ad manipulations adopted

from Keller (2006) in the current research contexts might not make self-efficacy (response efficacy) salient enough as compared to the control ad. We expect that the difference between the matched cells and the control ad cells may become significant by making self-efficacy (response efficacy) more salient in the ad (e.g., add more sentences to manipulate self-efficacy or response efficacy in each ad). Future research could examine this possibility.

## GENERAL DISCUSSION

Collectively, five studies support our theorizing regarding the interplay of consumers' coping and construal levels on persuasion. A pilot study showed that the use of problem-focused coping activates lower construal level mindsets, whereas the employment of emotion-focused coping elicits higher construal level mindsets. Study 1 showed that a match between consumers' coping and construal levels in ad messages leads to greater persuasion. Study 2 replicated findings in study 1 by measuring cortisol level, a physiological measure of stress. Study 3 shed light on the mechanisms underlying these matching effects and revealed that the effects of a match between problem-focused coping and low construal level messages on persuasion are driven by self-efficacy enhancement, whereas the effects of a match between emotion-focused coping and messages construed at a high level on persuasion are driven by response efficacy enhancement. Study 3 also revealed these matching effects occurred only when individuals were primed to experience a health stressor, as predicted by coping theory. Finally, study 4 examined the mediating role of self-efficacy and response efficacy by using a moderation approach.

### Theoretical Contributions

*Coping and Coping Outcomes.* Past research on coping has extensively documented antecedents of the use of particular coping strategies (consumers' personality [Duhachek and Iacobucci 2005], difficult decisions [Luce, Payne, and Bettman 1999]; the stages of adopting new technology [Mick and Fournier 1998]). However, scant research has examined consumer-related outcomes or consequences that reliance on specific coping strategies promotes (product beliefs [Cui, Bao, and Chan 2009]; fluency and persuasion [Duhachek et al. 2012]; stress reduction [Miller et al. 2008] offer exceptions). The current research contributes to the coping literature by documenting new coping outcomes (i.e., distinct construal mindsets, persuasion, physiological cortisol responses). That is, we showed that the use of particular coping strategies influences subsequent information processing through an activation of distinct construal mindsets, and these coping-triggered shifts in construal levels further affect persuasion. In addition, Miller et al. (2008) showed that the match between coping and marketing

stimuli reduces stress by asking participants to rate the extent to which they feel stressful. The current research extends the findings in previous research by measuring physiological stress responses via cortisol level.

Furthermore, the present research enriches the coping literature by showing that different coping strategies activate different types of efficacy via an activation of construal level mindsets. We show that individuals who use problem- (emotion-) focused coping strategies activate self- (response) efficacy when they are shown a low- (high-) level construal message. Past research on coping has demonstrated that self-efficacy determines the use of either problem- or emotion-focused coping strategies (Lazarus and Folkman 1984; Sujan et al. 1999). However, scant research has examined the possibility that a particular coping strategy activates efficacy as a consequence. Thus the current research enriches the existing coping literature by showing that the use of different coping strategies activates different types of efficacy through construal mindsets.

*Coping, Message Frames Differing at Construal Levels, and Persuasion.* Recent research in the health marketing literature has examined the effects of message frames varying construal levels (Chandran and Menon 2004) and the interactive effects of consumers' psychological states and message frames (Spassova and Lee 2013). However, to our best knowledge, no research has investigated how the effectiveness of message frames construed at different levels will vary depending on the particular coping strategies consumers employ. Bringing coping theory into the health message frame literature is important because pursuing health goals or watching health messages often creates stress, and people cope with stress using different coping strategies. To fill this gap, the current research shows that a match between consumers' coping and construal level of the message increases persuasion. Although the current research focuses on health-related stress, coping, and health messages, we posit that the findings could be extended if the ad contains messages in the same domain in which consumers feel stressed. That is, consumers may feel stressed because of failing to meet a career goal and want to cope with stress. In this context, marketers may increase the effectiveness of an ad message regarding career improvement products by construing the ad messages at different levels.

*A Match, Self-Efficacy, Response Efficacy, and Persuasion.* This research also builds on the growing literature on matching effects in persuasion. A considerable amount of research in the marketing domain (Lee and Aaker 2004; Shavitt 1990; Wheeler et al. 2005) and the health domain (Brug, Campbell, and Assema 1999; Kreuter et al. 1999; Rothman and Salovey 1997; Skinner et al. 1999; Updegraff et al. 2007; Uskul, Sherman, and Fitzgibbon 2009) has demonstrated the effects of a match on persuasion and has identified a variety of mediating processes in these relationships (Lee et al. 2010; Mayer and

Tormala 2010; Petty and Wegener 1998). We identify a novel process, building off recent findings examining the mediating role of self-efficacy (White et al. 2011). It is critical to understand the role of efficacy in the health message context because considerable previous research in the health communication domain has suggested that distinct types of efficacy exist and play critical roles in determining message compliance or reducing maladaptive behaviors (Casey et al. 2009; Choi et al. 2013). To the best of our knowledge, scant consumer research examines the role of self-efficacy and response efficacy together in shaping persuasion in health messaging (Keller 2006 offers an exception). Therefore, the current research contributes to the health marketing literature by identifying new consequences of a match between coping and construal level, namely self-efficacy and response efficacy enhancement, and by documenting the mediating role of self-efficacy and response efficacy in driving the effects of a match on persuasion, resultant from unique forms of coping.

*Self-Efficacy and Response Efficacy.* The present research contributes to the literature on self-efficacy and response efficacy. First, previous research has shown that the causal direction between self-efficacy and response efficacy remains speculative, and both can lead to healthy outcomes (Schwarzer and Renner 2000). The current research enriches understanding of both and identifies unique antecedents for each form. Future research could seek to identify the situations where self-efficacy increases response efficacy or vice versa. In addition, previous research has posited that self-efficacy can be broken down into other dimensions, such as action efficacy (i.e., the belief that one can set goals and take initiative) and coping efficacy (i.e., the belief that one can maintain the desired behaviors; Schwarzer and Renner 2000). We conducted a preliminary investigation into these types of efficacy in a separate study but found that a match between problem-focused coping and low construal level increased both action self-efficacy and coping self-efficacy. Although we did not find the effect of a match between problem-focused coping and low construal level on two different types of self-efficacy, other types of self-efficacy matching may exist in different contexts, and thus future research could examine this possibility.

## Managerial Implications

This research also has important practical implications for marketers. Given the growing concern regarding subjective well-being and increased persuasive attempts to help consumers engage in preventive strategies, it is worth identifying the ways in which firms or the federal government can enhance the effectiveness of their persuasive appeals. This article suggests that marketers should consider consumers' use of particular coping strategies that affect the way consumers process health messages. For example,

the current research highlights unique efficacy processes that increase message effectiveness. Practitioners could enhance the effectiveness of their ad appeals further by changing consumers' beliefs about their ability (i.e., self-efficacy; "You can do it!") or about the effectiveness of their actions (i.e., response efficacy; "Your action will work out!"). These statements could elicit the proper types of efficacy, thereby facilitating persuasion. Thus marketers should understand these unique efficacy processes when they develop health messages.

## DATA COLLECTION INFORMATION

The first author and the second author supervised the collection of data for the pilot study (May 2012), study 1 (June 2012), pretest in study 1 (June 2012), and pretest in [online appendix C](#) (April 2013) by research assistants at

the behavioral lab at Indiana University. The first author analyzed these data under the guidance of the second author.

The first author collected data for studies 3 (March 2016) and 4 (April 2016), pretest in study 2 (March 2015), stress manipulation pretest in [online appendix A](#) (December 2015) and pretest in [online appendix B](#) (April 2016) via Amazon's MTurk. The first author analyzed these data. The first author supervised the collection of data for the study 2 (September 2015) by a research assistant at the behavioral lab at McGill University. The saliva samples collected were sent to the Analyses and Conservation Laboratory at the Centre for Studies on Human Stress (CSHS) for analyzing the cortisol level in saliva samples. After receiving the cortisol level data from CSHS, the first author ran ANOVAs under the guidance of the second and third authors.

## APPENDIX A

### Coping Manipulations Used in a Pilot Study, Studies 1, 2, 3, and 4

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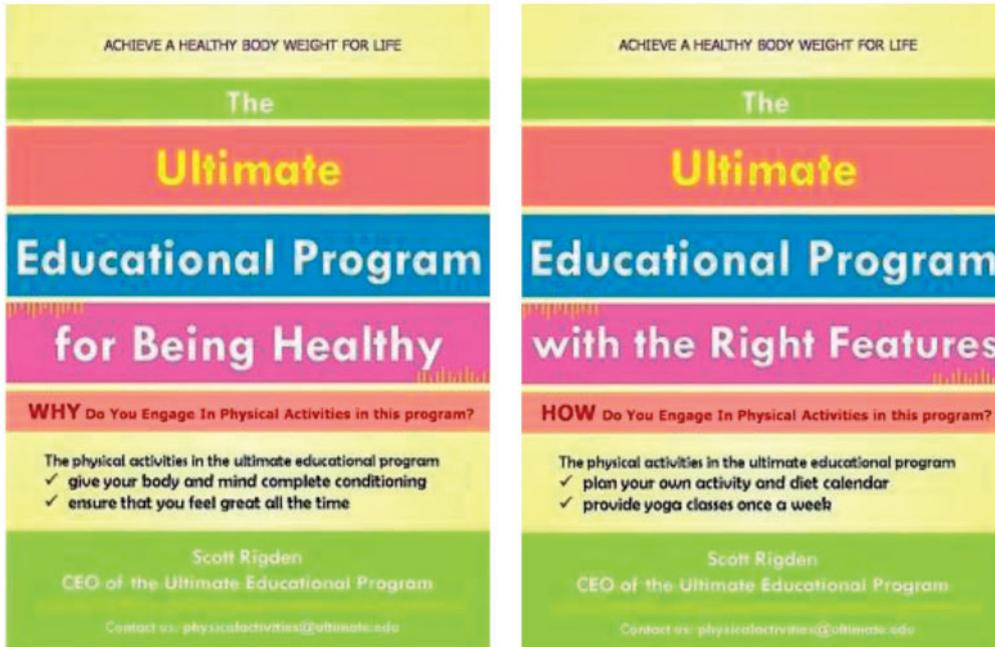
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Stress and coping cover story	Our daily life is fun but stressful. Just think about your life this year. You are taking a bunch of classes or working and need to manage multiple tasks at home, school, or work successfully at the same time. You may not get enough sleep or have to drink a lot of coffee to stay awake. That is, it is often hard to balance your health and academic or social life. To be healthy, a lot of people try to work out to maintain their health (e.g., go to the gym). Although being healthy is an important and enjoyable goal, it sometimes creates stress. For example, you may feel stressed when you decide not to go to the gym but eat a bunch of cupcakes or when you drink a lot of alcohol rather than eat healthy food. In other words, pursuing a health goal itself also creates stress. Given the prevalence of stress elicited by pursuing health goals in our life, the psychology department at one of the universities in North America has funded important stress research and clinical advances. The psychology department has recently found that employing PROBLEM-FOCUSED COPING strategies (or EMOTION-FOCUSED COPING strategies) can be the best way to deal with stress related to pursuing health goals effectively.
Problem-focused coping (in a pilot study and study 1)	Problem-focused coping entails efforts such as thinking about possible ways to improve a situation, thinking about one part of the problem at a time, planning actions regarding how to handle the stressful situation, or getting advice from others regarding how to find the solution. " <i>These kinds of problem-focused coping can be helpful because they help the individual make the best of things by doing as much as they can to mitigate problems</i> " (Miller et al. 2008, 641).
Emotion-focused coping (in a pilot study and study 1)	Emotion-focused coping involves efforts such as stopping or avoiding thinking about unpleasant thoughts regarding the stressful situation, letting negative emotions out somehow to feel better, trying to think about the bright side of the situation, or telling others how they feel. " <i>These kinds of emotion-focused coping can be helpful because they prevent the individual's anxiety or distress from being overwhelming, thus reducing stress</i> " (Miller et al. 2008, 640).
Problem-focused coping (in studies 2, 3, and 4)	Problem-focused coping entails efforts such as thinking about possible ways to improve a situation, thinking about one part of the problem at a time, planning actions regarding how to handle the stressful situation, or getting advice from others regarding how to find the solution. " <i>These kinds of problem-focused coping can be helpful because they help the individual make the best of things by doing as much as they can,</i> " thus reducing stress (Miller et al. 2008, 640).
Emotion-focused coping (in studies 2, 3, and 4)	Emotion-focused coping involves efforts such as stopping or avoiding thinking about unpleasant thoughts regarding the stressful situation, letting negative emotions out somehow to feel better, trying to think about how to see the bright side of the situation, or how to get emotional support from others by telling others how they feel. " <i>These kinds of emotion-focused coping can be helpful because they prevent the individual's anxiety or distress from being overwhelming, thus reducing stress</i> " (Miller et al. 2008, 640).

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APPENDIX B

Ads Used in Study 1



Note: The manipulation of the construal level of the message was adopted from Lee, Keller, and Sternthal (2010) and revised. Moreover, the content of the message was adopted from <http://healthierus.gov/>.

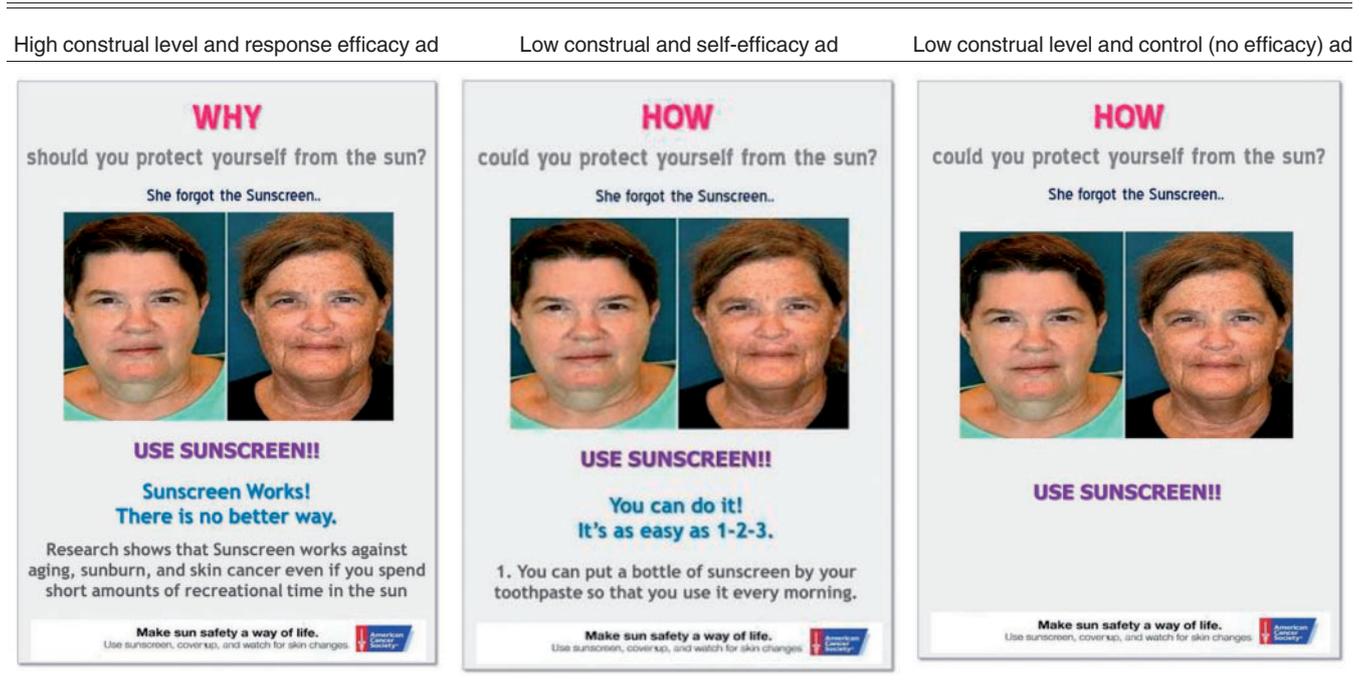
APPENDIX C

Examples of Construal Level Ads Used in Studies 2 and 3



## APPENDIX D

## Examples of Ads Used in Study 4



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