



A self-regulatory framework for message framing [☆]

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HIGHLIGHTS

- ▶ We describe how messages can be framed and predict when and for whom frames will be most effective.
- ▶ The *content* of a message is essential; different topics induce different regulatory orientations.
- ▶ Describing the *pleasures of adhering* is most effective for promotion focus recipients.
- ▶ Describing the *pains of not adhering* is most effective for prevention focus recipients.
- ▶ We integrate previous theories into a single framework emphasizing self-regulatory principles.

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ABSTRACT

After several decades of research on message framing, there is still no clear and consistent answer to the question of when emphasizing positive or negative outcomes in a persuasive message will be most effective. Whereas early framing research considered the type of recommended behavior (health-affirming vs. illness-detection) to be the determining factor, more recent research has looked to individual differences to answer this question. In this paper, we incorporate both approaches under a single framework. The framework describes the multiple self-regulatory levels at which a message can be framed and predicts when framing at each level will be most effective. Two central predictions were confirmed across four studies: (1) messages describing the *pleasures of adhering* to the recommended behavior are most effective for recipients in a promotion focus (who are concerned with meeting growth needs), whereas messages describing the *pains of not adhering* are most effective for recipients in a prevention focus (who are concerned with meeting safety needs), and (2) the *content* of an advocacy message is essential, as different topics induce different regulatory orientations. By showing that different message content can induce a promotion or prevention focus, past findings and theories can be accommodated within the proposed framework, and a single set of self-regulatory principles can be used to understand message framing.

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Introduction

An advertisement for the HairMax LaserComb entices potential (bald) buyers with the claim, “You don’t have to suffer the misery of hair loss anymore.” The X5 Hair LaserOrb strikes a more upbeat tone by promising “You can enjoy... thicker, fuller hair in as little as two months” (Skymall, 2009). At some level, it is clear that both advertisements are using the same approach to persuade potential buyers: “If you use our product, an outcome you want will be yours.” At another level, however, it is equally apparent that the advertisements feel quite different from one another. Whereas the LaserComb can lift the weight

of your miserable existence, the Laser Orb will make possible the joy of running your fingers through a thick head of hair once again.

When will describing an advocated behavior in different ways influence message effectiveness? Beyond helping advertisers sell expensive and no doubt powerful hair growth products, this question of message framing has important theoretical implications. By message framing, we refer specifically to framing the outcomes of an advocated behavior in terms of either the *benefits afforded by adopting* the recommendation or the *costs associated with failing to adopt* it (i.e., what is often called “gain/loss” framing). Consistent with the theoretical and practical importance of this topic, research on message framing has been a fixture of the persuasion literature for over three decades. In a highly influential paper, Rothman and Salovey (1997) advocated prospect theory as framework for predicting when different frames would be most effective as a function of the behavior itself (i.e., whether the behavior had certain or uncertain outcomes; see also Rothman, Martino, Bedell, Detweiler, & Salovey, 1999). More recently, the focus has been on identifying individual differences that are associated with responsiveness to particular message

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frames (e.g., Cho & Boster, 2008; Latimer et al., 2008; Rothman, Wlaschin, Bartels, Latimer, & Salovey, 2008; Schneider et al., 2001; Updegraff, Sherman, Luyster, & Mann, 2007; Uskul, Sherman, & Fitzgibbon, 2009).

In this paper, we incorporate both approaches under the same self-regulatory framework (see also Rothman et al., 2008). We propose that in order to understand message framing it is useful to search for broad principles that describe behavior equally well at both the individual difference level and the situational-influence level, and, importantly, to do so with a framework that is explicit about different sensitivities to gains and losses. If one conceives of different behavioral outcomes as priming particular orientations in people, then it is possible to understand both approaches to message framing with a shared set of principles.

The results of four studies show that different health outcomes resulting from the same health behavior can induce different regulatory focus orientations, even for behaviors of the same type (Studies 1a and 1b; Study 2). We further show that describing the pleasure resulting from enacting an advocated behavior is more persuasive for people in a promotion focus and describing the pain of not adhering is more persuasive for people in a prevention focus, regardless of whether that focus was induced (Studies 2 & 4) or chronic (Study 3). Finally, we incorporate a number of novel contributions which extend prior, similar approaches, including sensitivity to different types of gains and losses for individuals in different regulatory states (Study 4) and the role of regulatory content (safety vs. growth concerns) in message framing (Studies 1a and 1b; Study 2).

A self-regulatory framework

The purpose of the framework proposed and tested in this article is two-fold. First, it seeks to understand what exactly is being manipulated in message framing research.¹ As a descriptive endeavor, the framework outlines the different ways that a message can be framed, drawing on approaches that distinguish among levels of a motivational hierarchy (see, e.g., Scholer & Higgins, 2008). Second, the framework serves as a predictive tool, describing when one framing will be more effective than another. Regulatory focus theory (Higgins, 1997) is used to predict when and for whom each framing is most effective, given that the content of a message can induce different regulatory orientations in message recipients and people in different regulatory orientations are differentially sensitivities to positive and negative information. We propose that the effects of any framing manipulation cannot be understood without considering how the frame relates to the (induced or chronic) orientation of the message recipient, and understanding the framing manipulation itself requires a nuanced and detailed framework. As we describe the relevant distinctions made by regulatory focus theory, we relate each one to a different level of framing that is possible within a message; these levels of framing are outlined in Table 1. In this way, we illustrate how self-regulatory principles can inform message framing predictions.

Regulatory focus theory (Higgins, 1997, 2000b) proposes that self-regulation operates differently when serving different needs. People in a promotion focus are concerned with advancing their growth and nurturance needs, whereas people in a prevention focus are concerned with meeting their safety and security needs. One distinction of particular importance is that different *hedonic consequences* are more motivating for people in each focus. Although people in a promotion focus and a prevention focus both want to attain desired end-states and avoid undesired end-states, there is an asymmetry such that promotion focus people are more motivated by pleasure and prevention focus people are more motivated by pain (Idson, Liberman, & Higgins, 2000,

2004). In terms of message framing, then, a central prediction of the current research is that messages framed in terms of the *pleasures of adhering* to a recommended behavior should be more effective for promotion focus people, whereas messages framed in terms of the *pains of non-adherence* should be more motivating for prevention focus people.

Another regulatory focus difference exists in *outcome sensitivities*, which describe how pleasure and pain are defined for a person. For promotion focus people, pleasure is the presence of positive outcomes and pain is the absence of positive outcomes. Conversely, for prevention focus people, pleasure is the absence of negative outcomes and pain is the presence of negative outcomes (Higgins, Shah, & Friedman, 1997; Shah, Higgins, & Friedman, 1998).² Accordingly, messages that describe gain and/or non-gain information should be more effective for promotion focus recipients, whereas messages that describe non-loss and/or loss information should be more effective for prevention focus recipients (Camacho, Higgins, & Luger, 2003; Liberman, Idson, & Higgins, 2005).

The third key regulatory focus distinction centers on the *regulatory concerns* defined by people in each focus. People in a promotion focus self-regulate with attention toward advancing their *growth and nurturance needs*, whereas people in a prevention focus are concerned with the fulfillment and maintenance of *safety and security needs*. The distinction between growth and safety is fundamental, as all organisms must advance and grow, as well as be safe and secure, to survive.

Finally, different *strategies* may be used for pursuing the recommended behavior, and people in different regulatory orientations prefer different means of goal pursuit (Cesario, Grant, & Higgins, 2004; Cesario & Higgins, 2008; Freitas & Higgins, 2002; Higgins, 2000b, 2005; Higgins, Idson, Freitas, Spiegel, & Molden, 2003; Lee & Aaker, 2004). Given that strategy framing is not the focus of this manuscript, we discuss it only in the general discussion when discussing how the current work differs from past research on regulatory fit.

What is message framing? Past findings and approaches

The most frequently used framework for organizing message framing research has been prospect theory (Meyerowitz & Chaiken, 1987; Tversky & Kahneman, 1981). Prospect theory states that when faced with two options, one with certain and one with uncertain (risky) outcomes, the framing of the uncertain outcomes influences people's preferences for each option. When the uncertain outcome is framed in terms of potential gains, people are risk-averse; when the uncertain outcome is framed in terms of potential losses, people are risk-seeking. Rothman and Salovey (1997) proposed that different types of behaviors have different levels of risk associated with them, and thus the effects of framing should differ across classes of behaviors. In particular, these researchers distinguished "health-affirming" (or preventative) behaviors from "illness-detection" (or screening) behaviors. Health-affirming behaviors, such as sunscreen or condom use, are allegedly low in perceived risk because there is little chance of a negative outcome resulting from the behavior. Illness-detection behaviors, such as mammography, are high in perceived risk because performing the behavior may result in an unpleasant outcome.

Because gain frames should be more effective under conditions of low perceived risk and loss frames should be more effective under high perceived risk, the prediction is that messages describing the benefits of adhering to a recommendation will be more effective for health-affirming behaviors, whereas messages describing the costs of not adhering will be more effective for illness-detection behaviors (Rothman, Bartels, Wlaschin, & Salovey, 2006). This distinction between illness-detection behaviors and health-affirming behaviors remains the most popular variable used by researchers to predict and explain framing

¹ There are at least three different operational definitions of "message framing" (Levin et al., 1998). In this article, we are concerned with what Levin et al. refer to as "goal framing," in which the consequence of a recommended behavior is framed. Although research addressing this type of message framing has spanned many areas, it has been most frequently applied to the health advocacy literature, and we continue with this focus.

² The regulatory focus asymmetry in hedonic consequences derives from the fact that the pleasure of a gain is hedonically more intense than that of a non-loss and that the pain of a loss is hedonically more intense than that of a non-gain (Idson et al., 2004).

Table 1
Illustration of framing levels in a self-regulatory framework.

Level:	Question asked:	Framing is in terms of...	Abstract form of manipulation:
I. Hedonic consequences	What are the hedonic consequences of the behavior?	Pleasures of adherence	"If you follow the recommendation, you will experience pleasure."
		Pains of non-adherence	"If you don't follow the recommendation, you will experience pain."
II. Outcome sensitivities	What is pleasure and pain?	Pleasure: presence of positives (gains)	"If you follow the recommendation, you will get good outcomes."
		Pain: absence of positives (non-gains)	"If you don't follow, you will miss out on good outcomes."
		Pleasure: absence of negatives (non-loss)	"If you follow the recommendation, you will avoid negative outcomes."
		Pain: presence of negatives (loss)	"If you don't follow, you will experience bad outcomes."
III. Regulatory concerns	What kinds of outcomes do I care about?	Fulfilling growth & nurturance needs	"If you follow the recommendation, you will meet your nurturance needs."
		Meeting safety & security needs	"If you follow the recommendation, you will meet your safety needs."
IV. Goal-pursuit strategies	What means or strategies do I use to attain my goal?	Eager approach means	"Make sure everything goes right when attaining your goal."
		Vigilant avoidance means	"Avoid anything that could go wrong when attaining your goal."

effects, and it highlights the existing focus in the literature on features *inherent to the behavior itself* as a way to understand message framing.

Although these predictions have yielded some empirical support (e.g., Rothman et al., 1999), support has been far from consistent, and prospect theory has been able to account only for a constrained range of persuasion situations (Gallagher & Updegraff, 2010; Lauver & Rubin, 1990; Levin, Gaeth, Schreiber, & Lauriola, 2002; Levin, Schneider, & Gaeth, 1998; O'Keefe & Jensen, 2007). In particular, the predicted gain-frame advantage for health-affirming behaviors fared rather poorly in a recent meta-analysis by O'Keefe and Jensen. The overall advantage was found, though the effect was disturbingly small ($r = .03$). The loss-frame advantage for illness-detection behaviors is a somewhat more reliable effect, as in Rothman et al., who consistently obtained a loss-frame advantage effect.³ (In the general discussion, we describe how our framework can address this difference in the consistency of gain/loss framing effects.)

Part of this inconsistency may stem from the fact that an important aspect of Rothman and Salovey's (1997) original proposal was more or less lost as research progressed. Specifically, Rothman and Salovey argued that one's representation of the behavior in question was a key variable in understanding reactions to framed messages, such that the predicted framing effects required people to actually think of the behavior in the way that the researcher intended. For example, in writing about the

³ As suggested by Levin et al. (1998), this lack of consistency may lie not with prospect theory itself, but with an application of the theory to decision situations for which it was never intended. The qualitative differences between the "risky choice framing" situation of prospect theory and the "goal framing" situation of interest to message framing researchers call for different theories to account for judgment and behavior in each situation. In line with this idea, one important reason why message framing effects have often been weak or inconsistent might be the lack of a guiding theoretical framework that speaks to the psychological processes inherent to the behaviors addressed by most message framing research, which are fundamentally self-regulatory problems (e.g., the initiation and/or maintenance of a health behavioral change). Addressing psychological systems that are directly implicated in this process is both advantageous and, perhaps, necessary to capture a complete picture of framing effects (cf., Fuglestad, Rothman, & Jeffery, 2008). Additionally, principles of motivated behavior are well established; drawing on a theory of self-regulation means utilizing a framework whose basic postulates are already supported (see, e.g., Higgins & Kruglanski, 2000).

predicted loss-frame advantage for Breast Self-Exam, they wrote: "For example, women who worry about the risk of finding a lump while conducting BSE should be particularly sensitive to a loss-framed appeal... to the extent that women consider BSE a health-affirming behavior, a gain-framed message might actually be more persuasive" (p. 11). While some research investigated individual differences in perceived risk as a moderator of framing effects (Meyerowitz, Wilson, & Chaiken, 1991; Rothman, Salovey, Pronin, Zullo, & Lefell, 1996; cited in Rothman & Salovey), researchers have largely forgotten about this key variable in Rothman and Salovey's approach. One goal of the present research is to address this early, important point.

Reconsidering past findings and approaches

Given the mixed support for the prospect theory predictions regarding message framing, we now consider whether our framework can provide an advance beyond current theories for understanding message framing. To answer this, we first address how the existing "gain/loss" distinction fits into the current framework (see Table 1). We believe that what most researchers actually intend to capture in their framing manipulations is the distinction between the *pleasures of adherence* and the *pains of non-adherence*, rather than actual gains and losses per se. In other words, if one considers all the messages that have been called "gain," "benefit," "positive," etc. framing and all those that have been called "loss," "cost," "negative," etc. framing, the conceptual bond linking together messages within each category is whether hedonic pleasure or pain results from a person's action. Thus, when we refer to "pleasure/pain" framing, we directly address what has been called "gain/loss" framing in previous research.

Almost exclusively, the existing literature on message framing has concerned itself with this basic conceptual level, without being more specific about the *kinds of outcomes* that follow from the recommended behavior (for exceptions see Apanovitch, McCarthy, & Salovey, 2003; Detweiler, Bedell, Salovey, Pronin, & Rothman, 1999; Yi & Baumgartner, 2008). In the terminology of our framework, this lack of attention to different outcomes manifests itself at two levels: inattention to *regulatory concerns* and *outcome sensitivities*.

Considering first the level of regulatory concerns, the content of health behavior outcomes has been considered irrelevant to understanding gain/loss framing effects. For instance, exercise could be described as leading to growth-related outcomes (better development) or safety-related outcomes (stronger immune system), a difference that, according to current accounts of message framing, should have no influence on framing effects. Our framework predicts that regulatory concerns should be important insofar as such concerns can induce a particular regulatory focus. Indeed, much work has demonstrated that regulatory focus orientations are both chronic predispositions and capable of being situationally-primed (for example, by having people consider growth versus safety concerns; Cesario et al., 2004; Förster, Grant, Idson, & Higgins, 2001; Freitas & Higgins, 2002; Higgins et al., 2003; Spiegel, Grant-Pillow, & Higgins, 2004). Thus, if promotion versus prevention orientations can be induced by considering different regulatory outcomes of an advocated behavior, and promotion versus prevention orientations are differentially sensitive to positive and negative information, then the content of the advocated behavior should impact whether "gain" or "loss" framing is most effective. Disregard for such concerns would have the effect of introducing substantial variability into message framing effects, potentially contributing to the inconsistency of framing effects across studies.

Consider, for instance, a "gain"-framed message that states "If you exercise, you will reduce your chances of heart disease" and a "loss"-framed message that states, "If you don't exercise, you will fail to protect yourself from heart disease." In this case, the researcher happens to have emphasized a safety concern (inducing a prevention focus in the message recipient), thereby making the "loss"-framed message more effective. However, the researcher instead could have chosen to

emphasize growth or nurturance concerns (e.g., a stronger, more fit body), which would have induced a promotion focus and led to a “gain”-frame effect. In terms of existing approaches, prospect theory is unable to accommodate effects of different regulatory concerns unless such concerns induce changes in the perceived riskiness of the recommended behavior.

Considering next the level of *outcome sensitivities*, researchers have not been sensitive to differences between the presence of positive outcomes and the absence of negative outcomes (gain vs. non-loss information) and between the absence of positive outcomes and the presence of negative outcomes (non-gain vs. loss information).⁴ Indeed, the level of outcome sensitivities is a source of frequent confusion in framing research. Consider several of the better known studies on message framing, which illustrate how different manipulations can be given the same labels, as well as how identical manipulations are sometimes given different labels. Meyerowitz and Chaiken (1987) investigated the effects of what they termed “gain/loss” framing on breast self examination (BSE) by describing either the presence of positive outcomes from performing BSE (*gain frame*) or the absence of positive outcomes from failure to perform BSE (*loss frame*). Block and Keller (1995) also investigated the effects of what they termed “gain/loss” framing on two health behavior attitudes, but they did so by describing either the absence of negative outcomes (*gain frame*) or the presence of negative outcomes (*loss frame*). Uskul et al. (2009) also tested “gain/loss” framing but did so by combining both types of outcomes.

Our intention is not to criticize researchers for their operationalizations of message framing manipulations, but instead to point out that this general imprecision could be responsible for much of the difficulty in summarizing the message framing literature, leading some researchers to prematurely state the lack of framing effects. Without more precise terminology, two researchers could be using the same set of terms to describe their manipulations while actually testing very different comparisons — and a regulatory focus theory framework predicts that such differences should have divergent effect on the reactions of promotion and prevention message recipients. Our framework provides a more fine-grained description of framing manipulations and a reason for why such distinctions should matter.

In recent years, several researchers have related message frames to some characteristic of the message recipient in order to understand framing effects (e.g., Updegraff et al., 2007), with a number of studies utilizing regulatory focus theory (e.g., Jain, Lindsey, Agrawal, & Maheswaran, 2007; Keller, 2006; Kim, 2006; Latimer et al., 2008; Lee & Aaker, 2004; Rothman et al., 2008; Zhao & Pechmann, 2007). Our goal is to continue with this momentum while at the same time testing a framework that advances beyond these existing approaches by: (1) specifying the nuances of the ways in which messages can be framed; (2) incorporating such framing possibilities into a more general motivational hierarchy framework; and (3) illustrating how the described outcomes of a behavior, rather than something inherent to the behavior itself, can influence how framing effects unfold (thereby providing a crucial reinterpretation of the illness-detection/health-affirming distinction). In the general discussion, we provide a more specific analysis of how our framework differs from two related approaches, Rothman et al.'s (2008) proposal and Cesario et al.'s (2004) regulatory fit findings.

⁴ Rothman and Salovey (1997) described the 2×2 combinations as “attaining and not attaining desirable or undesirable outcomes.” (In their view, the presence of positive outcomes and the absence of negative outcomes are equivalent “gains,” and the presence of negative outcomes and the absence of positive outcomes are equivalent “losses.”) Yi and Baumgartner (2008) refer to these four cells as “the presence and absence of gains and losses.” To be consistent with the broader literature on self-regulation, we prefer the terms presence and absence of positive and negative outcomes. “Gain/loss” framing is non-optimal because “gains,” in the Rothman and Salovey sense, include *both* gains and non-losses, and “losses” include *both* non-gains and losses. The more precise terms used here avoid this confusion.

Overview of current research

The current research was designed to address the following questions. First, do different outcomes as described in a health-advocacy message induce promotion or prevention focus orientations (Studies 1a, 1b and 2)? Second, can results from existing studies utilizing the illness-detection vs. health-affirming distinction be explained by these differences in regulatory focus, and can behaviors of one type be manipulated in such a way as to produce results that cannot be accounted for by existing frameworks (Study 2)? Third, are messages framed across the levels of our framework more or less effective depending on participants' induced (Studies 2 and 4) and chronic (Study 3) orientations?

Across studies, effectiveness was measured with behavioral intention and simulated purchasing behavior, which is typical for message framing studies. (See Cesario, submitted for publication, for replications of the effects found in Study 3 with actual health behaviors.) All participants completed only one regulatory focus study from our laboratory. All continuous variables were normally distributed.

Studies 1a and 1b: different health outcomes induce different orientations

Studies 1a and 1b tested the prediction that consideration of different outcomes of the same illness-prevention behavior can induce a promotion or prevention focus. In particular, health messages describing the safety outcomes of a behavior should induce a prevention focus, whereas those describing growth outcomes should induce a promotion focus. Studies 1a and 1b tested these predictions by having participants read about the negative effects of sun exposure and the use of sunscreen to prevent these effects. The outcomes of sun exposure were described as either resulting in skin cancer (a safety concern) or wrinkles (a growth/nurturance concern; see Safer, 1998 for evidence that attractiveness is a growth/nurturance concern). Following exposure to one of the two messages, we assessed whether participants viewed such an outcome as interfering more with the fulfillment of prevention or promotion goals. Study 1b was a direct replication of Study 1a, to ensure reliability of the effects. As such, they are described simultaneously.⁵

Method

Participants and design

Study 1a had 186 participants (71.66% female, ages 18–40, $M = 19.90$ years, $SD = 2.33$) and Study 1b had 195 participants (69.23% female, ages 18–37, $M = 20.11$ years, $SD = 2.07$) who completed in the experiments online in exchange for partial course credit in introductory psychology courses. Participants read about the negative outcomes of sun exposure, described as causing either skin cancer or wrinkles, between-participants. Complete text of the health information can be found in Appendix A.

Procedure

After providing informed consent, participants were told they would read information taken from a health pamphlet concerning skin cancer or wrinkles. They then completed the two measures described below.

⁵ The general impression may exist that past work has demonstrated a clear “gain”-frame advantage for preventative sunscreen use (e.g., Detweiler et al., 1999; Rothman, Salovey, Antone, Keough, & Martin, 1993); however, results from these studies have been far from clear, and there are significant ambiguities in the conclusions that can be drawn from these studies. Thus, in terms of relating the current studies to past work on sunscreen use, we felt that past research was equivocal at best and the main point was to show that sunscreen behavior could induce either orientation, depending on the outcomes described.

Materials

Goal interference measure. The degree to which participants believed that the outcomes of sun exposure would interfere with their hopes and aspirations or duties and obligations was assessed with two items, each using scales from 1 = *not at all* to 9 = *very much*. Participants were told either to imagine receiving a diagnosis of skin cancer or to imagine developing heavy wrinkles on the face and neck. All participants were then asked “To what degree do you think this would interfere with your ability to meet your [duties and obligations/hopes and aspirations] in life?” We analyzed responses to each item separately, with higher numbers on the duties and obligations item reflecting greater interference with prevention focus self-regulation and higher scores on the hopes and aspirations item reflecting greater interference with promotion focus self-regulation.

Results and discussion

We hypothesized that reading about skin cancer from sun exposure should induce a prevention focus, whereas reading about wrinkles from sun exposure should induce a promotion focus. We therefore predicted that participants in the skin cancer condition should rate this outcome as interfering more with their duties and obligations than hopes and aspirations, whereas participants in the skin wrinkles condition should rate this as interfering more with their hopes and aspirations than duties and obligations.

Across both studies this prediction was confirmed. Paired-samples *t*-tests within each condition comparing responses on the goal interference measures revealed the predicted effects. As displayed in Table 2, participants in the skin cancer condition rated getting skin cancer as interfering more with their duties and obligations than with their hopes and aspirations, Study 1a: $t(93) = 4.853, p < .001$, Cohen's $d = 0.51$; Study 1b: $t(97) = 4.834, p < .001, d = 0.39$. Conversely, participants in the skin wrinkles condition rated getting wrinkles as interfering more with their hopes and aspirations than with their duties and obligations, Study 1a: $t(91) = -3.023, p = .003$, Cohen's $d = 0.25$; Study 1b: $t(96) = -1.899, p = .061, d = 0.17$.

Across both studies, when exposure to the sun was described as resulting in skin cancer, participants viewed it as interfering more with their duties and obligations; when exposure resulted in wrinkles, they viewed it as interfering more with their hopes and aspirations. Certainly the pattern of means indicates that participants generally held cancer as interfering more than wrinkles, which is to be expected. What is important to note is that the framework predicts the *difference*. We are aware of no other theory in the message framing literature that would predict differences in interfering with each type of self-regulation.

Study 2: manipulating the outcomes of the *letrolisus* virus

Studies 1a and 1b showed that different outcomes of the same behavior, specifically one used in prior framing research, can induce different regulatory orientations. Study 2 extends this argument to the case of health-affirming vs. illness-detection behaviors. Study 2 tests the prediction that the outcomes of a given type of behavior could be manipulated to induce different regulatory focus orientations, which will then affect subsequent framing effects. If there is something inherent to the type of behavior (health-affirming vs. detection), then manipulating the outcomes of that behavior should have no effect on whether pleasure or pain framing is most effective. If, on the other hand, the outcome matters in determining framing effects, as predicted here, then any type of behavior should be able to show pleasure or pain effects depending on the type of outcome addressed.

To test this prediction, we followed Rothman et al. (1999) and created a health-affirming message for a novel health concern, the fictitious *letrolisus* virus. In all cases, participants read a message advocating inoculation against the virus (a health-affirming behavior). For half of the

Table 2

Means (standard deviations) of interference with promotion and prevention focus goals: Studies 1a and 1b.

Outcome of sun exposure:	Skin cancer		Wrinkles	
	Study 1a	Study 1b	Study 1a	Study 1b
Duties and obligations	4.60 (1.28)	4.80 (1.48)	2.49 (1.36)	2.62 (1.37)
Hopes and aspirations	3.85 (1.65)	4.19 (1.65)	2.84 (1.49)	2.87 (1.58)

subjects, the virus was described as having negative consequences for one's physical safety. For the other half, the virus was described as having negative consequences for one's ability to fulfill growth and accomplishment needs. Each message described either the pleasures of adherence or the pains of non-adherence. We predicted that, even though the advocated behavior (inoculation) is a health-affirming behavior in both cases, there would be a pleasure-frame advantage for the growth message and a pain-frame advantage for the safety message. Rothman and Salovey's (1997) prospect theory approach would predict only an overall advantage of pleasure framing.

We also measured promotion- and prevention-related affective responses to success and failure at following the recommendation. If a different pattern of affective responses to each advocacy message is observed, this would provide additional support for the proposal that emphasizing different outcomes induces different self-regulatory systems (supporting the findings from Studies 1a and 1b).

Method

Participants and design

Two hundred and six participants (78.6% female; ages 18–27, $M = 19.36$ years, $SD = 1.52$) completed the experiment in exchange for partial course credit in an introductory psychology course. The design was 2 (regulatory concerns: safety vs. growth) \times 2 (framing: pleasure of adherence vs. pain of non-adherence), between-participants.

Procedure

All sessions were run individually. As in Rothman et al. (1999), participants were told they would read a health alert concerning a real illness and to “take this information seriously and read it carefully and completely. We'd like you to imagine as vividly as possible being at risk for contracting the disease while you read it.” They were then provided with a health pamphlet similar to the kind one would find in a doctor's office. After reading this pamphlet, participants completed the measures described below.

Materials

Persuasive message. Participants read one of four pamphlets describing the *letrolisus* virus and its consequences; the complete text of all four messages appears in Appendices B (safety messages) and C (growth messages). In all cases, the message advocated obtaining an inoculation against the virus. The outcomes of the virus (i.e., what the inoculation prevented) were described as being detrimental either to one's safety or to one's ability to fulfill growth and nurturance needs. This manipulation was crossed with the framing manipulation, which was directly analogous to the original Rothman et al. (1999) “gain/loss” manipulation. In the *pleasure of adherence* (“gain”) frame condition, this information took the general form of “if you get the inoculation, you can prevent the consequences of the virus.” In the *pain of non-adherence* (“loss”) condition, this information took the general form of “if you fail to get the inoculation, you will not prevent the consequences of the virus.”

Behavioral intentions. Two items assessed participants' intention to obtain an inoculation against the virus on a scale from 1 = *not at all* to 7 = *extremely*. Participants rated how likely they would be “to get the inoculation sometime soon” and how tempted they would be “to put off getting the inoculation” (reverse coded).

Perceived risk. Following Rothman et al. (1999), we also obtained ratings of participants' perceived risk of contracting the virus, to be used as a covariate in analyses. Participants rated “How likely do you think it is that you will develop this illness?” on a scale from 1 (not at all) to 7 (extremely).

Affective responses. The degree to which participants experienced promotion-related affect vs. prevention-related affect when thinking about succeeding and failing at following the recommendation was assessed with two items. Participants were asked to imagine that they “got the inoculation and it worked... how relieved versus happy would you be at this result?” Participants indicated their response on a nine-point bipolar scale from 1 = *extremely relieved* to 9 = *extremely happy*. Next, they were asked to imagine that they “failed to get the inoculation and you ended up getting the disease... how worried versus sad would you be at this result?” Participants again indicated their response on a nine-point bipolar scale from 1 = *extremely worried* to 9 = *extremely sad*. Participants' affective response was computed by averaging across each scale, such that higher numbers indicate experiencing greater promotion-related emotions (elation and sadness) and lower numbers indicate experiencing greater prevention-related emotions (quiescence and anxiety). We included affective responses as an indicator that participants in the safety vs. growth message conditions were in a prevention vs. promotion focus, given that different affective responses follow from different regulatory focus orientations (e.g., Shah & Higgins, 2001).

Funneled debriefing. Upon completion of the other measures, participants completed a written funneled debriefing. The form was composed of four items, each of which probed participants' potential suspicion of the reality of the *letrolisus* virus with increasingly targeted questions. We coded responses to the four items (“What do you think this experiment is about,” “Did any part of this experiment seem strange to you, or were you suspicious of anything,” “Did you think any of the tasks were related? If so, how,” and “Have you ever heard of the *letrolisus* virus?”) to gauge participants' suspicion.

Results and discussion

Behavioral intentions

It was predicted that the effect of message framing would differ depending on whether the recommended behavior resulted in safety-related or growth-related outcomes, with framings describing the pain of non-adherence (“loss” framing) being more effective for safety messages and framings describing the pleasures of adherence (“gain” framing) being more effective for growth messages. Because it is not meaningful to ask participants about their intentions to receive an inoculation for a virus that they do not believe actually exists, participants who expressed suspicion that the virus was not real during the funneled debriefing ($n = 54$) were not included in this analysis, leaving 152 participants for this analysis. (Suspicious participants were distributed roughly equally across pleasure/pain framing conditions [$n = 25/n = 29$; $\chi^2 < 1$] and growth/safety conditions [$n = 30/n = 24$; $\chi^2 < 1$].)

An analysis of covariance (ANCOVA) with outcome concerns and framing condition as the independent variables and perceived risk as the covariate (as in Rothman et al., 1999) was conducted. As predicted, there was a significant interaction between outcomes and framing, $F(1, 147) = 5.835$, $MSE = 1.740$, $p = .017$, model $R^2 = .215$, $p < .001$. This

interaction reflects the opposite effects of framing on message effectiveness, depending on the concerns addressed by the message. When the inoculation was described as addressing growth concerns, framing the message in terms of the *pleasures of adherence* ($M = 4.534$, $SD = 1.401$) was more effective than framing the message in terms of the *pains of non-adherence* ($M = 3.973$, $SD = 1.491$), planned contrast $p = .066$, $d = 0.39$. In contrast, when the same inoculation behavior was described as addressing safety concerns, framing the message in terms of pains ($M = 4.743$, $SD = 1.291$) was more effective than framing the message in terms of pleasures ($M = 4.261$, $SD = 1.405$), planned contrast $p = .122$, $d = 0.36$. It should be noted that the interaction between outcomes and framing remains significant when perceived risk is not included as a covariate, $F(1, 148) = 4.964$, $p = .027$.

Affective responses

Participants' affective responses to imagining success and failure at adhering to the recommended behavior were also analyzed to test for patterns predicted by regulatory focus theory. Given that the affective items required participants simply to imagine that they had received or failed to receive the inoculation, we used the entire sample as restrictions based on believability of the virus are not relevant for these items (i.e., they could still imagine having failed to get the inoculation and subject themselves to danger). Participants' average affective response was entered as the dependent variable in an ANOVA with outcome concerns and framing condition as the independent variables; ten participants did not answer the affective response items, yielding $n = 196$. As expected, there was no interaction observed, $F < 1$, but a significant main effect of outcome concerns was obtained, $F(1, 192) = 5.352$, $MSE = 3.881$, $p = .022$, model $R^2 = .046$, $p = .029$. This effect indicated that participants who read the growth-related message experienced relatively greater promotion emotions ($M = 5.07$, $SD = 1.96$), whereas participants who read the safety-related message experienced relatively greater prevention emotions ($M = 4.35$, $SD = 1.99$), $d = 0.36$.

The results of Studies 1 and 2 support the argument that our framework can accommodate and clarify past findings concerning the health-affirming (preventative) vs. illness-detection (screening) distinction. Framing effects were shown in Study 2 to be dependent on the outcomes associated with a behavior, independent of the type of behavior itself. Specifically, when a health-affirming behavior was described as preventing growth-related negative outcomes, the predicted pleasure frame advantage was found. When the behavior was described as preventing safety-related negative outcomes, however, the exact opposite framing effect was found — an advantage for pain framing. The affective response data are also consistent with predictions derived from the regulatory focus framework, indicating that success and failure resulted in different affective experiences depending on the outcomes associated with a behavior. It is important to note that the manipulation of pleasure and pain framing used in this study is exactly identical to past manipulations of “gain/loss” framing.

Study 3: pleasure/pain framing and chronic orientations

The purpose of Study 3 was to test a central prediction of the current framework using participants' chronic orientations: that the effects of message framing depend on the chronic regulatory focus of the message recipient. In terms of the proposed framework, we tested for differences in describing the pleasure of adherence vs. pain of non-adherence, while keeping outcome sensitivities consistent across frames (i.e., whether pleasure and pain are described as the presence/absence of positives/negatives).

Method

Participants and design

One hundred twenty participants completed the experiment in exchange for partial course credit in an introductory psychology

course (70.0% female, ages 18–23, $M = 19.35$, $SD = 1.33$). Participants received either a pleasure- or a pain-framed message, between-participants.

Procedure and materials

All sessions were run individually and were described as combining studies from researchers in the psychology and marketing departments. Participants first completed the computerized regulatory strength measure. This measure assesses participants' promotion and prevention focus, conceptualized as the strength of their ideal selves (promotion) and ought selves (prevention) as guiding characteristics. (For past uses of this measure, see, e.g., Amodio, Shah, Sigelman, Brazy, & Harmon-Jones, 2004; Brodscholl, Kober, & Higgins, 2007; Higgins et al., 2001; Higgins et al., 2003; Higgins et al., 1997; Liberman, Idson, Camacho, & Higgins, 1999; Liberman, Molden, Idson, & Higgins, 2001; Shah & Higgins, 1997, 2001; Shah et al., 1998.) This idiographic measure asks participants to list four adjectives describing the kind of person they ideally would like to be (their hopes and aspirations) and four adjectives describing the kind of person they feel they ought to be (their duties and obligations). After listing each adjective, participants provide a rating of the extent to which they ideally possess (ought to possess) each attribute and the extent to which they actually possess each attribute.

Throughout the task participants' reaction times are recorded and these reaction times serve as a measure of participants' accessibility of ideals and oughts. Specifically, participants' ideal (ought) strength is calculated as the sum of the time required to provide each ideal (ought) attribute and each ideal (ought) extent rating. The first three sets of ideal and ought responses are used in this calculation, with the fourth entry for each type serving as a substitute if any errors are made by participants on the first three trials (e.g., repeating adjectives, deleting an initial response). Because of the skew inherent in reaction time data, all response times are log-transformed prior to analyses. Additionally, both scales are multiplied by -1 , so that higher numbers on the ideal (ought) scale indicate stronger ideal (ought) strength. Both participants' ideal scores and participants' ought scores are included simultaneously in all analyses.

After completing the strength measure, participants began the second part of the study. The experimenter placed a 500 mL bottle of mouthwash on the table in front of them and gave a brief, two-sentence description about the importance of dental hygiene. The experimenter then told participants to imagine being in a store, with \$5, and deciding how much to pay for the bottle of mouthwash. In the *pleasure of adherence* condition, participants were told to "Think about what you would gain by buying this bottle of mouthwash;" in the *pain of non-adherence* condition, they were told to "Think about what you would lose by not buying this bottle of mouthwash." It is important to note that in both cases, participants are thinking of desired outcomes (e.g., fresh breath, whiter teeth, fewer germs).

Dependent measure. The measure of message effectiveness was the amount of money participants verbally reported being willing to pay for the mouthwash.

Results and discussion

Data preparation

Ideal strength and ought strength were centered prior to analyses. Thirty-five participants who did not provide three usable ideal trials and three usable ought trials were not included in the analyses. It is important to note, however, that all interactions reported below do not change in significance level when the full dataset is used. Restricting the analyses to participants who completed the measure exactly, however, is a more reliable analytic approach. Regression diagnostics for an initial round of analyses identified six outliers. These outliers were removed from subsequent data analysis; once again, it

is important to note that including these participants does not change the significance tests of any interactions reported below. The final number of participants on which all analyses are based was $n = 79$.

Message effectiveness

We predicted the effect of framing to differ depending on the regulatory focus of the message recipient, with pleasure (pain) framing being more effective for promotion (prevention) focus participants. A multiple regression with money offered as the dependent variable and ideal strength, ought strength, and framing condition (0 = pain, 1 = pleasure) as the independent variables was conducted. First, as expected, there was no three-way interaction, $t(71) < 1$, so a regression with all two-way interactions as the highest terms was conducted, $R^2 = .27$, $p < .001$. As predicted, there were two significant interactions in opposite directions between ideal strength and framing, $\beta = .73$, $SE = .26$, $t(72) = 2.79$, $p = .007$, and ought strength and framing, $\beta = -1.20$, $SE = .28$, $t(72) = -4.34$, $p < .001$. As shown in Fig. 1, as participants' ideal strength increased, pleasure-framed messages were more effective, $\beta = .50$, $SE = .18$, $t(72) = 2.86$, $p = .006$, and pain-framed messages were (non-significantly) less effective, $\beta = -.22$, $SE = .19$, $t(72) = -1.17$, $p = .25$. In contrast, and as shown in Fig. 2, as participants' ought strength increased, pain-framed messages were more effective, $\beta = .62$, $SE = .19$, $t(72) = 3.28$, $p = .002$, and pleasure-framed messages were less effective, $\beta = -.58$, $SE = .19$, $t(72) = -2.98$, $p = .004$.

Another way to understand these effects is to calculate the predicted amount of money offered in pleasure- and pain-framed conditions for participants high in ideal strength versus high in ought strength. For participants at $+1SD$ ideal strength (and average ought strength), the pain-framed message resulted in an offer of \$3.20, whereas the pleasure-framed message resulted in an offer of \$3.85, $p = .052$, $d = 0.47$. For participants at $+1SD$ ought strength (and average ideal strength), the pleasure-framed message resulted in an offer of \$2.72, whereas the pain-framed message resulted in an offer of \$4.08, $p < .001$, $d = 0.91$.

In addition to these two-way interactions, a main effect of ought strength revealed that the more participants' ought strength increased, the more money they were willing to offer for the mouthwash, $\beta = .62$,

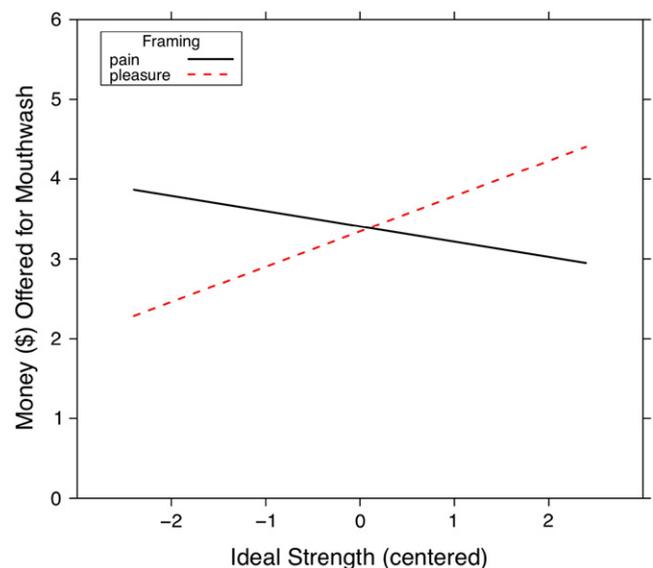


Fig. 1. Pleasures of adherence and pains of non-adherence framing conditions by participants' ideal (promotion focus) strength. Simple slope regression lines predict amount of money (\$) offered for bottle of mouthwash, Study 3.

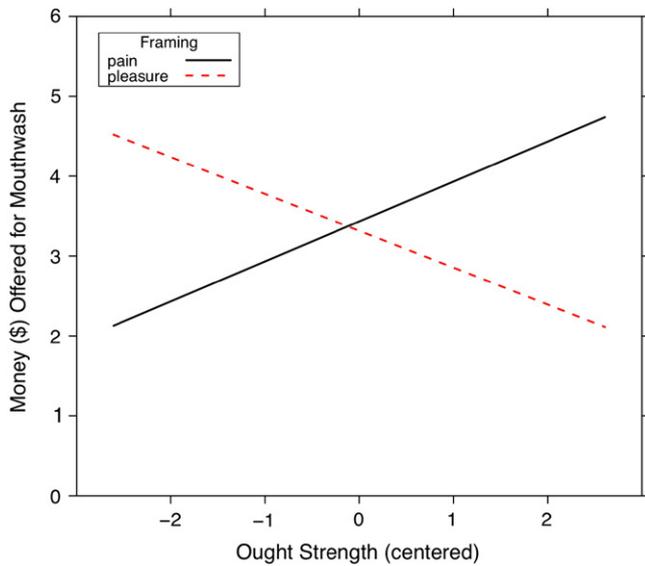


Fig. 2. Pleasures of adherence and pains of non-adherence framing conditions by participants' ought (prevention focus) strength. Simple slope regression lines predict amount of money (\$) offered for bottle of mouthwash, Study 3.

$SE = .19$, $t(72) = 3.28$, $p = .002$. Importantly, this effect is qualified by the Ought Strength \times Framing interaction described above.

The results provide clear support for the prediction that a framing manipulation can have exactly opposite effects depending on the regulatory focus strength of the message recipient.⁶ For promotion focus participants, describing the pleasures of adhering to the recommended behavior (what would otherwise be termed "gain framing") was the more effective framing. When considering the same behavior, there was an opposite effect for prevention focus participants, for whom describing the pains of not adhering to the recommendation ("loss framing") was the more effective framing.

Study 4: outcome sensitivity framing and primed orientations

There were three goals of Study 4. The first was to test an additional distinction proposed by the current framework: the difference in sensitivity to positive and negative outcomes for promotion and prevention focus in the context of message framing (see the *Outcome Sensitivities* level of Table 1). As noted in the introduction, one potential source of confusion in the message framing literature has been a failure to distinguish among different types of positive and negative outcomes of a health behavior – for instance, that an advocated behavior might lead to the presence of positive outcomes (gain) vs. the absence of negative outcomes (non-loss). To test this sensitivity, participants in this study received a health message advocating the use of mouthwash, which described the behavior as either resulting in the presence of positives or the absence of negatives. (Thus, both types of frames describe pleasurable outcomes.) To show differential sensitivity to messages describing the presence of positives vs. the

⁶ We also tested the unique predictions of promotion and prevention focus against Behavioral Inhibition and Behavioral Activation Systems (Carver & White, 1994). The literature on regulatory focus has emphasized the distinction between regulatory focus and other self-regulation measures such as BIS/BAS (see Cesario et al., 2008; Summerville & Roese, 2007). To test for this difference, we also had participants complete Carver and White's BIS/BAS sensitivity scale. In repeating the regression analyses reported above with the BIS and BAS scale responses substituted for ideal and ought strength scores, the framing manipulation showed no interactions with the BAS scale or the BIS scale, $|t|s < 1$, as expected.

absence of negatives would support the possibility that researchers' inattention to this level can lead to equivocal results in the overall research literature.

A secondary aim was to induce regulatory focus orientations differently. Whereas Studies 1–2 used the outcomes of the advocated behavior to induce regulatory focus, and Study 3 used chronic regulatory focus measures, it would be useful to show message framing effects with regulatory focus directly induced. The final goal was to use a sample outside the undergraduate population. To this end, we collected a diverse, online sample from Amazon's Mechanical Turk.

Method

Participants and design

Two hundred eighty-five participants (66.32% female, ages 18–73, $M = 31.62$, $SD = 11.34$) from Amazon's Mechanical Turk (see Buhrmester, Kwang, & Gosling, 2011 for information about the reliability of data provided by Mechanical Turk samples), completed the study in exchange for \$1; the study was restricted to United States residents who were native English speakers and participants who self-reported that they currently had an "acceptable" level of dental hygiene (a restriction which will become clear below, given our framing manipulation). The design was a 2 (regulatory focus prime: promotion, prevention) \times 2 (outcome sensitivities: presence of positives, absence of negatives), between-participants design.

Procedure and materials

The entire study was completed online. Participants self-selected to complete the study from pool of available tasks on the Mechanical Turk website, at which point they provided informed consent. Participants first completed the regulatory focus priming measure, which induced either promotion or prevention focus, between-subjects. This measure has been widely used in the literature as a way to induce promotion and prevention orientations (e.g., Brodscholl et al., 2007; McAuley, Henry, Wedd, Pleskac, & Cesario, 2012; Worthy, Maddox, & Markman, 2007). Participants solve a set of anagrams under the promise of reward (a \$50 gift card to a major grocery store), which they can win by being entered into a raffle. In the prevention prime condition, participants are given 15 raffle tickets and told they will lose five tickets if they miss more than 30% of possible anagram solutions and, conversely, they will not lose those five tickets if they miss no more than 30%. In the promotion prime condition, they are given 10 tickets and are told they will earn 5 extra tickets if they find 70% or more of possible anagrams and, conversely, that they will not earn the 5 extra tickets if they find less than 70%.

Following this regulatory focus induction, participants read a short description of the importance of dental hygiene. They were then asked to imagine being in a store, with \$5, and deciding how much to pay for a bottle of mouthwash. In the *positive sensitivities* condition, which emphasized the presence of positives (i.e., gains), participants were told:

The quality of your dental hygiene is at an acceptable level right now. Take a few moments to think about how buying this bottle of mouthwash would advance your dental hygiene from being merely acceptable to being excellent.

In the *negative sensitivities* condition, which emphasized the absence of negatives (i.e., non-loss), participants were told:

The quality of your dental hygiene is at an acceptable level right now. Take a few moments to think about how buying this bottle of mouthwash would maintain your dental hygiene at this acceptable level and keep it from slipping into a state of poor hygiene.

Finally, participants were asked if they currently use mouthwash (0 = no, 1 = yes), given the likely importance of this response for people's willingness to spend money on mouthwash.

Dependent measure. The measure of message effectiveness was the amount of money participants reported being willing to pay for the mouthwash.

Results and discussion

Data preparation

Two participants failed to complete either the priming measure or the dependent measure and were removed from analyses, leaving $n = 283$ as the final sample.

Message effectiveness

An ANCOVA with amount of money offered for the mouthwash as the dependent variable, and regulatory focus prime and outcome sensitivity framing as independent variables was conducted, with participants' current use of mouthwash as a covariate. (Current use did not interact with any of the other terms.) As predicted, there was a significant interaction between regulatory focus and outcome sensitivity framing, $F(1, 278) = 7.34$, $MSE = 1.17$, $p = .007$, Model $R^2 = .074$, $p < .001$. Participants primed to be in a promotion focus offered significantly more money for the mouthwash when the message was framed in terms of the presence of positives (gain; $M = 3.28$, $SD = 1.13$) relative to the absence of negatives (non-loss; $M = 2.88$, $SD = 1.20$, planned contrast $p = .015$, $d = 0.35$). Conversely, participants primed to be in a prevention focus offered (non-significantly) more money for the mouthwash when the message was framed in terms of the absence of negatives ($M = 3.12$, $SD = 1.00$) relative to the presence of positives ($M = 2.89$, $SD = 1.13$; planned contrast $p = .169$, $d = 0.22$). Finally, as expected, participants who already used mouthwash offered higher amounts ($M = 3.23$, $SD = 1.05$) than participants who did not currently use mouthwash ($M = 2.74$, $SD = 1.18$), $d = 0.44$. It should be noted that the interaction between regulatory focus and outcome sensitivities remains significant if this covariate is excluded.

Study 4, then, demonstrated that a variable that has not received adequate attention in the literature – the level of outcome sensitivities – can have opposite effects on message effectiveness given recipients' regulatory focus.

General discussion

The framework presented here suggests that the answer to the question of when framed messages will be most effective must include consideration of how the message frame relates to the motivational orientation of the recipient and how the content of a message (i.e., the types of regulatory concerns addressed by a recommended behavior) may induce different orientations in recipients. The use of a comprehensive self-regulatory framework to understand framing effects allows for message content, message framing, and recipient effects to be understood by the same self-regulatory principles. This approach is consistent with other perspectives advocating shared principles, for instance, between person and situation variables (e.g., Higgins, 2000a; Rothman et al., 2008). Furthermore, the data presented make a case for the importance of distinguishing different types of framing that can occur in a single message.

Studies 1a, 1b, and 2 demonstrated that the regulatory concerns (nurturance vs. safety) of a single behavior can be manipulated to induce different regulatory focus orientations which, as shown in Study 2, can produce opposite framing effects. Study 2 directly manipulated the regulatory concerns of a health-affirming (preventative) behavior to show that either "gain" or "loss" framed messages could be more effective for this class of behaviors. Study 3 provided evidence that message framing effects depend on the chronic

regulatory focus of the message recipient, with messages describing the pleasures of adhering to a recommended behavior more effective for promotion focus recipients and messages describing the pains of non-adherence more effective for prevention focus recipients. Study 4 demonstrated effects at the level of outcome sensitivity and showed the importance of considering nuanced framings of a message, in this case the difference between gain and non-loss. Across these studies, support for the framework was obtained by priming regulatory focus in two different ways and assessing it as a chronic variable, emphasizing different health behaviors, assessing message effectiveness with a variety of self-report measures, samples drawn from different populations, and implementing manipulations with a variety of advocacy messages.

In addition to demonstrating the utility of this framework for predicting framing effects, we also outlined a more precise set of terminology to describe the variety of manipulations that can be implemented in a framing situation. In doing so, it is our hope that some of the inconsistencies observed across previous framing studies can be made coherent and that connections in previous research can be unveiled. Of key importance in this framework is the level of *hedonic consequences*; framing at this level describes either the pleasures of adhering to the recommendation or the pains of not adhering to it. We describe this level as fundamental because it is this conceptual manipulation that ties together the variety of operationalizations used by different researchers. Thus, rather than labels such as "gain/loss" or "positive/negative," which have other, more specific meanings, we suggest for several reasons the use of the pleasure/pain terminology in subsequent framing research. First, use of the labels "gain/loss" glosses over important distinctions (e.g., it treats the presence of positives and the absence of negatives as equivalent "gains"). Second, the use of gain/loss terminology equates this type of message framing with the risky choice framing of prospect theory, which is a theory not suited to this kind of manipulation (Levin et al., 1998).

Integrating prior findings and approaches

One strong advantage of the proposed framework for understanding message framing is its ability to explain a variety of effects with the same general principles. There has been a tradition in the message framing literature to treat the type of behavior (e.g., health-affirming vs. illness-detection) as the primary determinant of framing effects (e.g., Rothman & Salovey, 1997). Recently, a body of research has developed that shows the importance of individual differences in predicting framing effects (e.g., Rothman et al., 2008; Updegraff et al., 2007). In line with Rothman et al., we advocate the merging of these approaches, and we believe that the framework presented here can accomplish this aim.

In addressing behavioral and individual difference factors simultaneously, other insights into past findings may also emerge. For example, in their meta-analytic review O'Keefe and Jensen (2007) found an overall positive "gain frame" effect for health-affirming behaviors, but this effect was driven by a significant effect for one class of behaviors: dental hygiene. One possibility for this finding is that dental hygiene behaviors can be construed as *either* addressing nurturance needs (e.g., white teeth and fresh breath) or addressing safety needs (e.g., plaque and gum disease). (Rothman et al., 2008, proposed a similar interpretation, arguing that a dental visit can be construed either as an opportunity to detect dental problems or to affirm the health of one's teeth.) If both concerns are induced within a single message, it is possible that a person's chronic regulatory focus "wins out" in determining which framing is most effective. Given that participants in Western samples are chronically more promotion focus than prevention focus (Higgins, 2008), one would expect to find an overall advantage for messages describing the pleasures of following the recommended behavior (i.e., "gain frame" advantage), which is exactly what the meta-analysis found. Future research should address the

consequences of describing multiple concerns of an advocated behavior and how consistent vs. inconsistent descriptions of outcomes interact with recipients' chronic orientations.

Our framework has the advantage of also explaining differences in the *consistency* of obtaining framing effects for health-affirming and illness-detection behaviors. Specifically, the framework predicts that such variability could be due to differences in the types of concerns that are typically emphasized for each class of behavior. Illness-detection behaviors nearly always address safety concerns (the potential presence of a life-threatening illness), which would likely induce a prevention focus; accordingly, there has been a consistent loss-frame advantage for this class of behaviors. Health-affirming behaviors are quite a different matter, however. Taking steps to ensure that one's body develops in a healthy way is a promotion focus mode of self-regulation, but the content of such messages often contains illness-related concerns, thereby combining different primes. Accordingly, the predicted gain frame advantage has been much less consistent. For example, consider Rothman et al.'s (1999) study of the *letrolisus* virus. The advocacy message recommended a health-affirming inoculation against the virus, but the consequences of the virus if left untreated were safety-related (congestion, chronic lung problems, death); these researchers did not obtain the predicted gain-frame advantage. Thus our framework is unique in being able to account for the observed variability in obtaining framing effects.

In examining past research, it would also be useful to place the current framework in relation to Rothman et al.'s (2008) proposal for message framing, which bears some similarity to our proposal. In that chapter, Rothman and colleagues propose regulatory focus theory as a way to integrate dispositional and behavioral effects in message framing, which we also advocate. One key difference between the current work and Rothman et al.'s proposal is that they retain the illness-detection/health-affirming distinction and simply add regulatory focus as the mediating variable, proposing that illness-detection behaviors *by their nature* prime prevention focus, and health-affirming behaviors *by their nature* prime promotion focus. In contrast, we demonstrate that regulatory concerns can induce orientations regardless of the type of behavior in question. Additionally, it is also the case that the current manuscript provides a nuanced description of the different levels at which a single message can be framed, thereby clearing up confusion in terminology that has plagued past research and prevented meaningful conclusions across studies. Finally, while Rothman and colleagues offer an excellent analysis of the framing literature and suggestions for future research, the current work contains empirical support for the (shared and unique) propositions contained herein. Beyond these important differences, we agree with much of Rothman et al.'s proposal, including the importance of understanding message framing with a theory that can address situational and dispositional effects with the same set of self-regulatory principles.

Clarifying the distinction between outcome framing and regulatory fit

One level that has not been addressed in the current studies is the level of *regulatory strategies*. Indeed, an important question concerns the degree to which the present framework represents a conceptual advance beyond past work showing regulatory fit effects of describing goal pursuit strategies in terms of eager approach or vigilant avoidance means. People in a promotion focus prefer to use eager approach strategies to attain their goals (e.g., search for means of advancement and do not close off possibilities), whereas people in a prevention focus prefer to use vigilant avoidance strategies (e.g., be careful and avoid mistakes). When the preferred means of goal pursuit are used, people experience regulatory fit and the goal pursuit process *feels right*. As just one example, Cesario and Higgins (2008) presented participants with a video message advocating funding for a new after-school program. While delivering the message, the source

used nonverbal behaviors and vocal cues that indicated either eagerness (enthusiasm, advancement) or vigilance (caution, carefulness). These researchers found that when the message was delivered in an eager manner, it was more effective for promotion focus recipients; conversely, when it was delivered in a vigilant way, it was more effective for prevention focus participants. The present framework also concerns relating some aspect of the message (here, hedonic consequences) to participants' orientations. Is this work substantively different from previous regulatory fit research?

The current framework can be distinguished from regulatory fit theory on conceptual grounds. We have intentionally avoided the regulatory fit language in describing framing effects because the framing effects demonstrated here concern the *outcomes* of one's actions and the sensitivity to different types of outcomes for people in a promotion and prevention focus. In addition to people in a promotion and prevention focus having different *preferences for goal pursuit* (which produce regulatory fit), they also have differences in the hedonic intensities for pleasures versus pains. It is this latter type of relation that is addressed by the current framework, and this outcome difference corresponds to the major focus of message framing research: What is the effect of emphasizing positive vs. negative outcomes on message effectiveness? It is not clear that anything in the current set of studies relates to people pursuing goals using different strategies or means, and therefore the current work falls outside the conceptual domain of regulatory fit theory. There is the possibility, which we have addressed elsewhere (Cesario, Higgins, & Scholer, 2008), that past research on regulatory fit and on message matching can be revisited and reinterpreted in different ways. For the current studies, however, we suggest that these are clear examples of pleasurable and painful outcomes being manipulated.

Domain specificity

The research presented here tests framing effects for the topic of health advocacy messages. Health persuasion has been the primary focus of message framing research, though studies outside this domain do exist. Two questions follow. First, are the principles outlined in the current framework applicable to topics unrelated to health decisions? Second, might other topics change the *instantiation* of these principles?

Addressing the first question, one would be hard-pressed to explicate reasons why the principles of this framework should not be applicable across domains. Over a decade of research on regulatory focus theory has found consistent support for the different sensitivities and preferences of people in a promotion versus prevention focus, and almost none of this work has used health behaviors as the topic of research. Nothing in regulatory focus theory or in the self-regulatory framework presented here would suggest that preferences inherent to promotion and prevention orientations should operate differently across domains.

The second question, however, reveals some interesting possibilities with important theoretical and practical implications. Above we note that the effects of chronic versus primed orientations may differ depending on whether the topic under consideration is represented strongly as fulfilling one or the other need. Indeed, it might be that for topics that address both promotion and prevention need fulfillment, a recipient's chronic orientation determines framing effects; for topics that address only one need, priming may be more influential. Topics may differ in their ability to be described in one way or the other. Although a virus may be described as detrimental to either growth or safety outcomes, it would probably be difficult to advocate for seatbelt use in a way that did not induce safety concerns. In this sense, then, the instantiation of the principles could differ across topics insofar as different topics may be more or less relevant to different types of outcomes.

Conclusion

The question of how to frame a recommended behavior in the maximally effective way has been the focus of research for several decades. The framework presented here represents a way to bring together past and current approaches under the same set of self-regulatory principles. In addition, the framework describes the different levels of message framing with a set of terms that can draw connections with other researchers in the self-regulation literature, as well as reveal previously hidden connections among researchers working directly on message framing. As with other persuasion techniques that emphasize tailoring the message to some important characteristic of the message recipient, we have proposed that message framing effects cannot be understood without considering the preferred framings of recipients with different regulatory orientations and how the behavior under consideration can systematically induce such orientations.

Appendix A

Prevention (Top) and Promotion (Bottom) Messages, Studies 1a and 1b

Skin cancer information

Protect yourself from the sun... and you will help yourself stay healthy!

- Skin cancer accounts for 40% of all cancers, with more than 600,000 cases diagnosed each year.
- 14% of skin cancer cases are melanoma, which can be deadly, whereas 86% are less serious non-melanoma.
- It is recommended that you use sunscreen with an SPF of 30 or higher every time you are exposed to the sun to protect yourself from skin cancer.
- Using a sunscreen with SPF 30 or higher can decrease your chances of damaging your skin and of bringing on an early death.

Please take a moment to think about skin cancer and how you can use sunscreen to prevent it.

Wrinkled skin information

Have healthy, wrinkle-free skin... Protect yourself from sun exposure!

Wrinkles are caused by sun exposure which damages elastin fibers in the skin, causing the skin to stretch and sag.

- Exposure to UV rays makes skin tough and leathery. It makes a person's skin age more quickly than normal.
- It is recommended that you use sunscreen with an SPF of 30 or higher every time you are exposed to the sun to stop wrinkles and premature aging.
- Using a sunscreen with SPF 30 or higher can decrease your chances of getting early wrinkles and signs of premature aging.

Please take a moment to think about wrinkled skin and how you can use sunscreen to prevent it.

Appendix B

Health-Affirming Safety Message in [Pleasure/Pain] Formats, Study 2

You have much to [gain/lose] by [getting/failing to get] an inoculation against the *letrolisus* virus.

If you [get/don't get] an inoculation against the *letrolisus* virus, you're [protecting/failing to protect] your body against a harmful illness.

The *letrolisus* virus is a highly contagious illness that is transmitted in much the same way as other common viruses, but it has far more damaging consequences. The consequences are primarily safety- and protection-related, as they interfere with your body's ability to maintain a healthy immune system and protect against the demands of the physical world. The initial symptoms include mild to severe congestion in the nose, throat, and lungs, along with difficulty breathing. Over time, however, the condition gradually gets worse, resulting in damaged tissue and an inability to stop pathogens (poisons) and neutralize toxins. Such a compromised system makes you susceptible to more serious diseases such as cancer and heart disease.

Doctors recommend that everyone receive a complete inoculation. To do so, you will need to make an appointment to receive a single injection of the *letrolisus* virus. Three days later, you must return to your doctor for a brief follow-up and to receive a second, oral dose of the vaccine.

[Prevention ensures you of your health/Failing to prevent undermines your health]...[Getting an inoculation against the *letrolisus* virus is the best way to ensure your safety and protection against future illness/If you don't get an inoculation against the *letrolisus* virus, you can't ensure your safety and protection against future illness].

Appendix C

Health-Affirming Nurturance Message in [Pleasure/Pain] Formats, Study 2

You have much to [gain/lose] by [getting/failing to get] an inoculation against the *letrolisus* virus.

If you [get/don't get] an inoculation against the *letrolisus* virus, you're [keeping/failing to keep] your body energized and attractive.

The *letrolisus* virus is a highly contagious virus that is transmitted in much the same way as other common viruses, but it has far more significant consequences. The consequences are primarily growth- and accomplishment-related, as they interfere with your ability to accomplish what you want in life. The initial symptoms include low energy, physical weakness, and a slight yellowing of the extremities (finger and toenails). Over time, however, the condition gradually gets worse as the virus interferes with your body's ability to circulate vitamins and minerals in the bloodstream and promote a healthy metabolism. These physical effects typically lead to unhappiness, a sense of non-fulfillment, and decreased confidence.

Doctors recommend that everyone receive a complete inoculation. To do so, you will need to make an appointment to receive a single injection of the *letrolisus* virus. Three days later, you must return to your doctor for a brief follow-up and to receive a second, oral dose of the vaccine.

[Prevention ensures you of your health/Failing to prevent the virus undermines your health]... [Getting an inoculation against the *letrolisus* virus is the best way to ensure your continued strength and sense of fulfillment/If you don't get an inoculation against the *letrolisus* virus, you can't ensure your continued strength and sense of fulfillment].

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