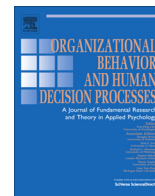




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## The influence of implicit theories and message frame on the persuasiveness of disease prevention and detection advocacies

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## ABSTRACT

This research investigates the effectiveness of health message framing (gain/loss) depending on the nature of advocacy (prevention/detection) and respondents' implicit theories (entity/incremental). Three experiments demonstrate that for detection advocacies, incremental theorists are more persuaded by loss frames. For prevention advocacies, incremental theorists are more persuaded by gain frames. For both advocacies (detection and prevention), entity theorists are not differentially influenced by frame. However, entity theorists are message advocacy sensitive such that they are more persuaded by prevention than detection advocacies, regardless of the message frame. These results are robust for measured as well as manipulated implicit theories and for different health contexts.

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## Introduction

Recent estimates suggest that healthcare expenditures in the US have increased to over \$2 trillion in 2010 (Cunningham, 2011). A critical consequence of this is that marketers, policy makers, and health care professionals have become increasingly responsive to and encouraging of people's efforts at making healthy lifestyle choices. A non-trivial and influential portion of this focus is on direct-to-consumer (DTC) advertising, which was \$4 billion in 2010 (IMS Health, 2010). Our research examines such advertising, with the goal of understanding several potential moderators of its effectiveness. One such moderator we investigate is a consumer level variable: the type of implicit theories consumers hold about fixedness (entity theorists) or changeability (incremental theorists) of the people and world around them (Dweck, Chiu, & Hong, 1995; Dweck & Leggett, 1988). Implicit theories have had a venerable following in psychology but have received scant attention in healthcare appeals research. We also examine two message-related

factors: the type of healthcare advocacy (prevention/detection; Kirscht, 1983) and the frame of the message (gain/loss; Krishnamurthy, Carter, & Blair, 2001). Health messages can encourage actions that can prevent disease (called prevention advocacies, such as using sunscreen to prevent skin cancer; Detweiler, Bedell, Salovey, Pronin, & Rothman, 1999) or to detect undesirable situations (called detection advocacies, such as doing breast self-examination to detect breast cancer; Meyerowitz & Chaiken, 1987). A further distinction rests on the frame of communication. Positive frames focus on benefits gained (e.g., "research shows that women who do breast self-examination have an increased chance of finding a tumor;" Meyerowitz & Chaiken, 1987, p. 504), while negative frames focus on benefits forgone ("research shows that women who do not do breast self-examination have a decreased chance of finding a tumor;" Meyerowitz & Chaiken, 1987, p. 504). The relative efficacy of prevention and detection appeals and the persuasive impact of messages framed in terms of benefits gained vs. benefits lost has been documented in healthcare settings (Rothman, Salovey, Antone, Keough, & Martin, 1993). In this research, we show that an individual's implicit theory of change is an important determinant of the effectiveness of prevention or detection advocacies framed as gains or losses.

Research has shown that most of the causes of death in the US are preventable (Mokdad, Marks, Stroup, & Gerberding, 2004). Prevention behaviors have important benefits such as reducing the

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risk of transmission of diseases (US Department of Health & Human Services, 2011). Early detection of diseases, in contrast, also has several health benefits such as a higher survival rate and more treatment options (Smith, Cokkinides, & Brawley, 2008). Therefore, understanding how to enhance people's compliance with disease prevention and detection recommendations is important to public well-being. While it is critical to differentiate between prevention and detection advocacies proposed in the taxonomy of health-related behaviors (Kirscht, 1983), the characteristics of message receivers are also important determinants of whether the messages are persuasive and actionable. In this research, we show that the type of implicit theories of change that people hold influence their processing of messages advocating prevention or detection behaviors framed as gains or losses. Incremental theorists believe in the changeability of their lives and are more attuned to dynamic change (Molden, Plaks, & Dweck, 2006); hence, they are sensitive to healthcare message framing highlighting outcome-equivalent but conceptually different movements from a given reference point (Levin, Schneider, & Gaeth, 1998). Therefore, the relative advantage between gain-framed and loss-framed health appeals for incremental theorists should depend on the nature of message advocacy. Entity theorists, in contrast, prefer to maintain stasis and the current state (Plaks & Stecher, 2007), which is consonant with prevention advocacies. Therefore, entity theorists should be more persuaded by health prevention than detection messages. However, entity theorists also believe in stability in their lives and are more attuned to fixed outcomes (Molden et al., 2006), and hence, they should not be influenced by the frame of the advocacy (Jain, Mathur, & Maheswaran, 2009).

Our research is the first to examine the joint influence of an individual's implicit theory orientation, the nature of the advocacy, and message framing on persuasion, thus bridging three domains to more fully understand how consumers respond to health appeals. Across three experiments in different health contexts, we find that consumers' implicit theories, the nature of the advocacy, and the message frame interact to impact the intent to follow or adopt the advocated behavior in the message. We show that while incremental theorists show differential preference for detection and prevention advocacies depending on the frame, entity theorists prefer prevention over detection advocacies, regardless of frame. In doing so, our research extends and broadens the current understanding of healthcare appeal effectiveness and holds promise for superior healthcare messaging strategy.

At a broad level, our investigation offers a more distilled picture of how implicit theories influence healthcare message receipt, both in terms of processing as well as judgmental consequences. In particular, we show for the first time in literature that for entity theorists, prevention advocacies are more persuasive than detection advocacies. In doing so, we extend past research regarding the impact of implicit theories on healthcare message effectiveness by examining the dichotomy of prevention and detection. We also establish that not only is the effectiveness of prevention and detection appeals impacted by the recipients' implicit theories, it is also contingent on the frame of the health message. Importantly we demonstrate that these effects of implicit theories on persuasion of healthcare appeals hold, whether such theories are held chronically by the recipient or are situationally induced. Such demonstration provides policy makers with an important tool to increase individuals' healthcare compliance. Theoretically, our investigation builds on past research that has examined the effects of consumer level differences on the persuasiveness of framed messages by identifying boundary conditions to those findings. Further, this research has substantial implications in consumer welfare, public policy, and direct-to-consumer advertising.

The rest of the paper is organized as follows. We first summarize research pertaining to evaluative outcomes of the type of

advocacies (prevention/detection) and gain/loss framed healthcare messages promulgated in healthcare communication literature. We then draw upon implicit theories literature to highlight key findings therein and to establish that such theories should influence processing of prevention and detection advocacies framed as gains or losses. These examinations enable us to draw process and outcome predictions for how implicit theories may interact with the stimulus-related factors (type of advocacy and frame). We conclude with a summary and discussion of the implications of our findings.

### Type of healthcare advocacies and message frames

Two types of advocacies, prevention and detection, are commonly used to persuade people to engage in healthy behaviors (Rothman et al., 1993). The distinction between prevention and detection behaviors has been proposed in the taxonomy of health-related behaviors (Fielding, 1978) and such behaviors have been found to influence risk assessment and decisions (Kirscht, 1983). Health prevention behaviors aim to prevent occurrence of disease while health detection behaviors aim to detect the presence or absence of a health problem. Rothman and colleagues (e.g., Rothman et al., 1993) have suggested that whether messages stress prevention or detection behaviors may be predictive of when gain- or loss-framed health messages may be more effective. This argument is based on the premise that detection and prevention behaviors may drive perceptions about the risk assessment of the advocated healthy behavior. Rothman, Martino, Bedell, Detweiler, and Salovey (1999) suggest that detection behaviors (such as a breast self-examination for detecting cancer) are considered high-risk because the individual now faces the risk of finding out whether she has breast cancer, whereas prevention behaviors are considered low-risk because individuals do not consider such behaviors to have any downsides (e.g., applying sunscreen). Prospect theory has shown that people are risk-averse when considering benefits gained but are risk-seeking when considering benefits lost (Kahneman & Tversky, 1979). Thus, the risk assessment implications of detection and prevention advocacies impact the effectiveness of framed advocacies, and past findings support this premise. For instance, loss-framed messages are more effective in promoting detection behaviors such as breast self-examination (Meyerowitz & Chaiken, 1987) and mammography (Banks et al., 1995), which are both aimed at detecting the presence of a current health problem; while gain-framed messages are more persuasive in promoting prevention behaviors such as regular physical exercise (Jones, Sinclair, & Courneya, 2003) and infant car seat usage (Christophersen & Gyulay, 1981), which help forestall sickness and health-related misfortunes.

While preliminary evidence suggests that the effectiveness of a health message may be impacted by whether it stresses prevention or detection behaviors, there are two unexplored issues in this research. First, the processes underlying such framing effects have not been fully understood (Rothman et al., 1999). Second, and importantly, it is not clear how different types of consumers respond to different types of healthcare appeals. The need for such documentation is underscored by several scholars. For example, Block and Keller (1995, p. 202) encourage that "future research should focus on additional individual...variables that could motivate processing effort" associated with messages. Latimer, Salovey, and Rothman (2007, p. 646) make a stronger call by contending that "the effectiveness of framed messages hinges on how the individual thinks and feels about the behavior." In addition, Abrams, Mills, and Bulger (1999) express a need to investigate the interaction between healthcare message variables and consumer differences. In support of this call for an examination of individual

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