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Do metaphors in health messages work? Exploring emotional and cognitive factors

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ABSTRACT

Health communicators publicize messages that use metaphors to compare abstract health-related concepts to concrete concepts in other domains. Such messages aim to change health attitudes and behavior, but do they work? According to Conceptual Metaphor Theory, metaphors can shape thought by transferring personalized knowledge of a concrete concept to understand and relate to an abstraction, despite their superficial differences. The authors extend this claim to specify emotional and cognitive factors potentially moderating the productivity (and counter-productivity) of metaphoric health messages. A *source resonance* hypothesis predicts that when a message frames a health risk metaphorically in terms of a concrete hazard (versus literally), individual differences in fear surrounding that particular hazard will differentially predict risk-related worry and thus prevention intentions. A *metaphoric fit* hypothesis predicts that a risk metaphor will be more persuasive when the recommended prevention response is itself framed metaphorically as addressing the concrete hazard (versus literally). These hypotheses were supported in three experiments conducted with online, undergraduate, and community samples (N = 539). With skin cancer as a case study, the studies tested the impact of messages framing sun exposure and sun-safe practices with or without metaphors of enemy combat. Findings illuminate how, when, and for whom metaphoric messages are persuasive, with theoretical and practical implications for health communication and metaphoric construal.

1. Introduction

People regularly encounter messages encouraging lifestyle behaviors that reduce the risk of illnesses such as cancer, influenza, and diabetes. But all too frequently these messages fail to inspire action. Whether encouraging people to exercise, floss, or get flu shots, there is considerable scope for improving the power of health messages to motivate lifestyle behavior change (CDC, 2015; Manella, 2016; Troiano et al., 2008). This scope includes sun protection behavior (U.S. DHHS, 2014). The incidence of skin cancer is increasing more rapidly than any other form of preventable cancer (Siegel, Miller, & Jemal, 2015); yet only 30% of American adults report regularly using sunscreen or wearing sun-protective clothing (Buller et al., 2011).

The current research examines the effectiveness of one communication strategy: Providing metaphors that compare ideas about health to concrete concepts in remote domains. This strategy deserves attention because metaphors are frequently and often haphazardly featured in public health campaigns, product marketing, news reports, and educational materials (Downs, de Bruin, Fischhoff, Hesse, & Maibach, 2009; Mukherjee, 2011; Sontag, 1978).

Do such widespread metaphors have the intended effects on health attitudes and behavior? Some experimental evidence suggests they do. Scherer, Scherer, and Fagerlin (2015) exposed participants to messages framing the flu in terms of concrete hazards such as a wild animal attacking one's health, a weed growing inside one's body, or an invading army. Compared to a literal description of the flu, these metaphoric messages increased intentions to get a flu shot.

Still, there are reasons to question whether metaphors consistently yield benefits, and further, research reveals little about the mechanisms by which metaphoric messages persuade when they do. Conventional wisdom suggests they create an emotional jolt, helping recipients appreciate the urgency of a health risk. Yet Scherer et al. (2015) found no evidence that metaphoric messages increased fear of the flu. Also, Conceptual Metaphor Theory (CMT; Kövecses, 2010; Lakoff & Johnson, 1980), the background theoretical perspective, raises the possibility that persuasive metaphors can be inert and even *backfire*, dampening recipients' concern and response.

To better understand the conceptual dynamics of metaphoric

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thinking, as well as how metaphor may be best utilized in behavior change campaigns, we build on CMT to specify emotional and cognitive factors potentially moderating the productivity, or counter-productivity, of metaphoric health messages. Three studies explore these factors in the context of skin cancer communication across laboratory and field settings.

2. Background

CMT posits that metaphor is a cognitive tool for understanding—and not just talking about—one concept in terms of a superficially dissimilar concept (Gibbs, 2008; Kövecses, 2010; Lakoff & Johnson, 1980). A metaphor's *target* is abstract and difficult to grasp, whereas its *source* is relatively concrete and easily understood. For example, one might use metaphor to understand the elusive process of recovering from a cold (the target) in terms of a physical journey (e.g., "I've *come a long way*") or escaping restraint (e.g., "It won't *let go*").

Metaphor supports understanding by creating a mapping that uses select elements of a source schema to structure representations of the target. Metaphor use, then, involves transferring source knowledge as a framework for understanding and relating to the target. To illustrate, the mapping created by the metaphor *recovery is a journey* transfers a conceptual template that implies that recovery has a *starting point* and a *destination*, choices are *branching paths*, and difficulties are *obstacles*. Target elements that do not share analogs with a source are downplayed in attention.

Research that manipulates *metaphoric framing*—comparing a message with metaphoric language or imagery with an equivalent literal or alternative-metaphoric message—consistently shows changes in target processing that correspond to source knowledge (Landau, 2017; Landau, Robinson, & Meier, 2014). In one illustrative study (Thibodeau & Boroditsky, 2011), participants who read an article comparing a city's crime problem to an aggressive beast recommended punitive crime-reduction strategies, whereas those who read the same facts framed in disease-metaphoric terms recommended strategies addressing crime's root causes. The messages did not explicitly mention crime reduction strategies, suggesting—in line with CMT—that activated metaphors prompted participants to transfer knowledge of a concrete source to conceptualize a problem in a different domain.

3. Integrating CMT with health communication

How can CMT inform models of health communication? Health risk messages can be effective when they increase recipients' fear or worry that the risk threatens their well-being (Cameron & Chan, 2008; Witte & Allen, 2000). Without a fear-like emotion stemming from the anticipated threat, recipients have less motivation to change their behavior. Simply evoking worry is not enough, however. Persuasive messages portray the recommended behaviors as relevant and effective for addressing the risk (Rogers, 1983; Witte & Allen, 2000). From there, we apply CMT to specify two hypotheses regarding the persuasive impact, or lack thereof, of metaphoric health messages.

3.1. Source resonance

Early demonstrations of metaphoric-framing effects showed that messages comparing abstract topics to affectively-charged sources changed target attitudes in source-consistent directions (Ottati, Renstrom, & Price, 2014). Going beyond these direct effects, researchers reasoned that if metaphor creates a systematic conceptual mapping, then it should transfer *personalized* source knowledge (Ottati & Renstrom, 2010). This yields a *source resonance* hypothesis: Exposure to a metaphoric message will affect target processing differently depending on recipients' preexisting conceptions of the source. If, alternatively, metaphor transfers stereotyped representations of generic source concepts (i.e., stripped of personal connotations), then metaphoric messages should not interact with individual differences in source conceptions.

Studies of sociopolitical messages support this hypothesis. When Ottati, Rhoads, and Graesser (1999) framed a senior thesis requirement metaphorically in terms of sports competition (e.g., "*Play ball* with the best" vs. literally), sports enthusiasts carefully evaluated the requirement and were thus more convinced by strong (vs. weak) arguments, whereas sports apathists were less attentive and thus less affected by argument strength. In another study (Landau, Keefer, & Rothschild, 2014), a news report comparing a corporate bankruptcy to a vehicle accident (vs. literally) led participants to focus blame on the company's CEO (the figurative driver) and away from other parties, but only if they strongly believed that vehicle accidents are caused by bad drivers (vs. other factors). The vehicle metaphor did not interact with beliefs about other accidents, supporting CMT's claim that metaphor transfers personalized source conceptions to guide target processing.

Spina, Arndt, Landau, and Cameron (2017) extended this work to the health domain. When Latina women read a message advocating Papanicolaou (Pap) smears that compared their body to a family (in which body parts figuratively support one another), higher valuing of collectivism and family loyalty predicted stronger intentions to get a Pap smear. When the message framed the same facts literally, endorsement of these values did not predict intentions.

3.2. Metaphoric fit

The effectiveness of a health message depends on its portrayal of not only the risk, but also the prevention behavior. From a CMT perspective, when people conceptualize a target problem metaphorically in terms of a source problem, they transfer source knowledge to reason about how to address that problem, even though the two problem scenarios are superficially unrelated and may require different approaches. This yields a *metaphoric fit* hypothesis: When a message frames a target problem metaphorically in terms of a concrete problem, it will be more persuasive when it also frames the proposed solution metaphorically as addressing that concrete problem (vs. literally or using another metaphor).

Studies of health messages support this hypothesis. In Keefer, Landau, Sullivan, and Rothschild (2014), an article framing depression metaphorically as a problem of being physically down increased the perceived efficacy of an anti-depressant medication framed metaphorically as elevating, but not a medication framed in literal terms. Similarly, Hauser and Schwarz (2015) reasoned that military metaphors for cancer imply a strategic approach to cancer treatment that is primarily aggressive and not restrained. Accordingly, participants who read a military-metaphoric framing of cancer were less motivated to engage in self-limiting behaviors (e.g., dieting) that reduce their cancer risk. When viewed through the lens of military strategy, certain behaviors seem poorly suited to fight the "war on cancer," even though these behaviors may be beneficial.

Despite the potential of the *source resonance* and *metaphoric fit* hypotheses to provide insights into health communication, important questions remain. Little is known about whether metaphoric framing effects are moderated by individual variability in the source's *emotional* resonance—specifically, fear-related emotions like worry. This is an important question because worry is a key catalyst of health prevention behavior. Further, evidence-based best practices stipulate the importance of fostering, via messaging, a coherent understanding of why and how recommended protection behaviors work to address a particular risk (Cameron, Marteau, Brown, Klein, & Sherman, 2012; Hall, Weinman, & Marteau, 2004; Lee, Cameron, Wünsche, & Stevens, 2011). Thus, the current studies focus on whether response framings elaborate (in either metaphoric or literal terms) how the recommended response protects against the health risk.