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This is your stomach speaking: Anthropomorphized health messages reduce portion size preferences among the powerless☆

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ABSTRACT

As food portion sizes increase, so too does the amount of energy consumed. The purpose of this study was therefore to determine whether the portion size preferences of individuals could be reduced. Across two experiments, this paper shows that a personally threatening health message that has been endorsed by a digestive system featuring anthropomorphic cues can reduce portion size preferences for energy dense foods and beverages, but only among those who feel powerless. This effect emerges because partially anthropomorphizing an internal body system transforms that system into an agent of social influence. The powerless, who are more sensitive to social influence than the powerful, will consequently be more attuned to threatening health information that has been endorsed by this partially anthropomorphized body system, shaping their behavioral preferences. Anthropomorphizing elements of the self may therefore represent a novel means for motivating behavior change.

1. Introduction

Individuals typically associate feeling with body and thought with mind (Gray, Knobe, Sheskin, Bloom, & Barrett, 2011), potentially shaping how they respond to health messages that focus on elements of the body or the mind. For example, the body, as the seat of feeling, is typically conceptualized as a non-agentic entity that is subject to the actions of others (Gray, Young, & Waytz, 2012), so individuals should be especially motivated to reduce any harm that may befall this entity (see Gray, Gray, & Wegner, 2007). Conversely, the mind, as the seat of thought and reason, is usually perceived as an intentional moral agent (Gray et al., 2012), so entreaties made by entities perceived capable of thought should be especially motivating given the ability of such entities to act as a source of social influence (Baumeister & Bushman, 2014; Waytz, Cacioppo, & Epley, 2010).

While the ascription of feeling to body and thought to mind is deeply held, there is the potential for both feeling and thought to be ascribed to a single internal body system through the process of anthropomorphism. Anthropomorphized objects are nonhuman entities that have been imbued with humanlike characteristics such as cognitions, emotions, and intentions (Epley, Waytz, & Cacioppo, 2007; Waytz, Cacioppo and Epley, 2010) and which, as a result, receive humanlike treatment from other social agents (Aggarwal & McGill, 2012; Waytz, Cacioppo and Epley, 2010). Ascribing thought to an internal body system through the process of anthropomorphism may consequently make a health message communicated by that system more persuasive to message recipients because of the perceived potential for that system to exert social influence. On the basis of this reasoning, factors affecting social influence in interactions between humans, such as psychological feelings of power (Rucker, Galinsky, & Dubois, 2012), should also affect the social influence that an anthropomorphized internal body system exerts on message recipients.

The focus of this study was therefore to explore whether a health message featuring an internal body system that has been depicted in such a way as to trigger anthropomorphic responses will interact with message recipients' psychological power states to influence those recipients' stated preferences for food and beverage portion sizes. The relevance of this behavioral context stems from the fact that food and beverage consumption increases with portion size (Hollands et al., 2015; Zlatevska, Dubelaar, & Holden, 2014), potentially contributing to the high and increasing rates of obesity observed around the world (Ng et al., 2014). One approach to addressing the association between portion size and energy consumption is to reduce the availability of large portion sizes within the market place (Marteau, Hollands, Shemilt, & Jebb, 2015). Another approach, and the one pursued in this study, is to encourage consumers to select smaller portion sizes of

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certain foods and beverages as a means of maintaining an appropriate energy balance and reducing their chances of becoming overweight or obese.

2. Literature review

2.1. Thinking minds and feeling bodies

The relationship between mind and body has perplexed philosophers for millennia (Kim, 2000), with dualists arguing for the distinctiveness of mind and body (Descartes, 1637/1972; Zimmerman, 2010) and monists contending that mind and body are inseparable (e.g., Bennett, 1981; Davidson, 1995; Schaffer, 2010). Notwithstanding contemporary neurological evidence that mind and body are inextricably linked (Laureys & Tononi, 2008), elements of dualism persist in the functions that medical professionals and members of the general community attribute to mind and body (Demertzi et al., 2009; Mehta, 2011; Sullivan, 1986). For example, and as reflected in numerous figures of speech, individuals tend to associate thought with the mind (e.g., "sharp mind") and feeling with the body (e.g., "broken hearted"). Such distinctions are also present in the way individuals respond to commands. For instance, when individuals are instructed to think of someone as a body, they strip that person of agency (i.e., thought) while simultaneously ascribing to them a greater capacity to experience emotion and sensation (i.e., feeling; Gray et al., 2011).

The ascription of feeling and thought to body and mind, respectively, may have profound, if previously unrecognized, implications for efforts to promote health-related behavior change. Individuals typically report a greater desire to avoid harming entities with a heightened capacity to experience sensation and emotion (i.e., feeling; Gray et al., 2007), so health messages focusing on the capacity of the body to feel should enhance individuals' motivation to protect the body from harm. At the same time, the ascription of agency (i.e., thought) to an entity renders that entity capable of social influence (Waytz, Cacioppo and Epley, 2010), and entities wielding social influence are more likely to motivate individuals to accept or reject health-related behaviors (Christakis & Fowler, 2007, 2008).

Given the body-mind distinction, the potential to successfully leverage the body-feeling and thought-mind associations within the same health message is likely to be limited. That is, the body (mind) is generally not associated with the capacity to think (feel), limiting the potential motivational levers that could be integrated into a health message focusing on a specific element of the body or mind. However, identifying processes that allow an individual to conceptualize a component of their own body as possessing both feeling *and* thought may provide health and social marketers a means for drawing on the potential messaging benefits associated with ascriptions of feeling and thought. One process that may allow for this fusion of feeling and thought within a single bodily organ is anthropomorphism.

2.2. Anthropomorphism and the body

According to the Scottish philosopher David Hume (1757/1957, p. xix), "there is a universal tendency among mankind to conceive all beings like themselves and to transfer to every object, those qualities." This tendency has come to be known as anthropomorphism, a term that combines the Greek words *anthropos* (human) and *morphē* (form) to describe the ascription of humanlike qualities to inanimate or nonhuman entities (Epley et al., 2007; Soanes & Stevenson, 2005). Anthropomorphism can occur literally, as when a signpost on a darkened street is mistakenly perceived to be a human, or accidentally, such as seeing a face in a cloud without believing that it actually possesses humanlike qualities (Guthrie, 1993). A third type of anthropomorphism, and the one that forms the focus of this study, is partial anthropomorphism.

Partial anthropomorphism arises when human attributes are ascribed to an object without that object being construed as being wholly human (Aggarwal & McGill, 2007; Guthrie, 1993). Pets, for example, are commonly anthropomorphized by their owners because of their humanlike traits and behaviors (Bradshaw & Casey, 2007), as are cars (Chandler & Schwarz, 2010) and toys (Lanier, Rader, & Fowler, 2013). Other objects, such as robotic devices, may be intentionally designed to evoke anthropomorphism in order to enhance consumer interaction and acceptance (Duffy, 2003; Nass & Moon, 2000). Irrespective of context, the effect of partial anthropomorphism is usually the same: the partially anthropomorphized object is ascribed agency (Epley et al., 2007; Waytz, Cacioppo and Epley, 2010; Waytz, Morewedge et al., 2010). This ascription of agency (i.e., thought) has important implications for how partially anthropomorphized entities are perceived and treated by humans (Epley & Waytz, 2009). Any entity deemed capable of planning and enacting behaviors, for example, will be perceived as having moral responsibility for its own actions (Gray et al., 2012), prompting other social agents to view that entity with affection or disapproval depending upon how those behaviors are construed (Epley & Waytz, 2009). While this moral responsibility may result in anthropomorphized entities being judged by humans, these entities may also be seen by humans as having the capacity to cast judgements on others. As Waytz, Cacioppo and Epley (2010) argued, anthropomorphized entities are "capable of observing, evaluating, and judging a perceiver, thereby serving as a source of normative social influence on the perceiver" (p. 222). Partially anthropomorphized entities may also be perceived as experiencing suffering (i.e., feeling), providing the preconditions necessary for those entities to elicit empathetic responses from humans (Waytz, Cacioppo and Epley, 2010).

While the potential for entities external to the individual to be partially anthropomorphized is widely accepted, several lines of evidence also suggest that entities internal to the individual are capable of being partially anthropomorphized. For example, studies have found that some individuals give their sex organs names suggestive of personhood, such as "your Majesty" or "The Hulk" for the penis (Cameron, 1992) and "Myra and Myrtle" for the breasts (Cornog, 1986). Other studies examining barriers to organ donation have found that many individuals forge strong emotional connections to organs such as the heart because of the perceived capacity of such organs to think and feel (Newton, 2011). This tendency is also reflected in the ascription of humanlike characteristics to certain organs, such as in the idiomatic phrase "my stomach is upset" and in Albert Einstein's *bon mot* that "an empty stomach is not a good political adviser" ("Sharp comment", 1930). The tendency to partially anthropomorphize bodily organs also explains why individuals asked to reflect on organ transplantation often mention fears of 'personality contamination' whereby the personality characteristics they have ascribed to their organs become transferred, along with their organs, to transplant recipients (Castelnuovo-Tedesco, 1973; Klapheke, 1999; Newton, 2011).

At a more conceptual level, theorizing within marketing and psychology highlights the potential for internal body systems to be perceived as being simultaneously part of, and yet external to, an individual, further supporting the ability of internal body systems to be partially anthropomorphized. For instance, Belk (1988, 1989) distinguished between the core essence of a person (i.e., the self) and entities that, while distal to the self, are used to construct the meaning of the self, such as possessions, places, people, and even body parts. Importantly, how distal these entities are perceived to be from the self will vary by the degree of free will or independence these entities are capable of exerting (McClelland, 1951). That is, an entity deemed to have free will (e.g., a person) will be perceived as being more distal to the self than one lacking free will (e.g., a car). This relationship has important implications for how individuals perceive objects that have been partially anthropomorphized. Partially anthropomorphizing a car, for example, will result in that car being imbued with the capacity to think and feel, thereby increasing how distal the car is perceived to be

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