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Research Article

Experiencing haptic roughness promotes empathy☆

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Abstract

Eliciting empathy plays a significant role in encouraging charitable donations. However, we know little about how incidental, contextual cues can facilitate empathy. In a series of behavioral, neuroscience, and field studies, we show that incidental exposure to haptic sensation of roughness (vs. smoothness) increases individuals' attention to the unfortunate others. Such heightened attention subsequently leads to enhanced empathic responses. These findings not only underscore the power of subtle contextual cues on shaping important behaviors but also point to the possibility of developing novel intervention strategies for promoting empathy and prosociality.

Keywords: Haptic roughness; Attention; Empathy

With about 2.3 million non-profit organizations operating in the United States (National Center for Charitable Statistics, 2012), many charities are struggling and competing for limited donations. Yet eliciting empathy and helping has never been easy. While extensive research has examined why people help and how to promote empathy and helping, much has focused on potential donors' demographic and psychographic characteristics (Harvey, 1990; Loewenstein & Small, 2007), identity (Aaker & Akutsu, 2009), and motivation (Dovidio, Allen, & Schroeder, 1990; Dunn, Aknin, & Norton, 2008). We know little about how incidental, contextual cues can affect empathy and helping (Bendapudi, Singh, & Bendapudi, 1996). Given that empathy is an important antecedent of helping behaviors (Bagozzi & Moore, 1994; Batson, 1991; Batson, Early, & Salvarani, 1997), if we can start identifying inherently non-social factors that may influence empathy and its behavioral applications, this may lead to novel approaches for facilitating the massive humanitarian needs of our complex, modern world. Although some early investigations have identified certain environmental factors, such as ambient fragrance (Baron, 1997) and music (North, Tarrant, & Hargreaves, 2004), we believe the current research is the first work to identify a haptic variable, namely, haptic sensation of roughness, and investigate its impact on people's empathy.

The sense of touch (i.e., haptics) provides us with one of the most fundamental means to acquire information and to connect with the external world (Krishna, 2012). Yet historically, despite its importance and ubiquity in our subjective experience, haptic sensations have received little attention in behavioral research (Ackerman, Nocera, & Bargh, 2010; Field, 2010). Existing research in haptics has primarily focused on the issue of the presence versus absence of touch. These factors include object attributes that encourage touch (Krishna & Morrin, 2008; McCabe & Nowlis, 2003), individual differences in the need for touch (Peck & Childers, 2003a, 2003b), situational factors that motivate touch (Peck & Shu, 2009; Peck & Wiggins, 2006), and interpersonal touch (Martin, 2012; see Gallace & Spence, 2010, for a review). Yet, little

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attention has been directed to examine the haptic attributes (i.e., texture, hardness, weight, and temperature; Lederman & Klatzky, 1987), while touch is always present. Within the limited research that examines the haptic attributes, most has focused on the psychophysical aspects (e.g., examining various physical factors contributing to human's tactile roughness perception; Dépeault, Meftah, & Chapman, 2009; Lawrence, Kitada, Klatzky, & Lederman, 2007), without shedding light on the influence of haptic attributes on people's behaviors. In the past few years, some exciting work has begun to reveal that haptic experiences can have a significant impact on social evaluative processes. For example, holding a resume attached to a heavy clipboard leads people to think the job candidate as more important, touching rough sandpaper makes individuals offer more in an Ultimatum game (Ackerman et al., 2010), and holding a cup of hot coffee causes people to perceive another person as having a warm personality (Williams & Bargh, 2008). The current research seeks to add to this line of research by proposing that haptic experiences can affect individuals' empathy in an unrelated context.

We propose that touching a rough surface may enhance individuals' empathic responses. This is expected to occur because experiencing haptic roughness primes people to pay increased attention to those who are experiencing misfortune or hardship. Such heightened attention subsequently triggers enhanced empathic responses toward the unfortunate others. By exploring these hypotheses, we not only wish to contribute to the literature on haptics, but also seek to shed light on how non-social factors, such as haptic experience, may influence people's empathy.

Theoretical background

The impact of haptic sensation on empathy

We first posit that haptic sensation of roughness, compared to smoothness, increases individuals' specific attention to others' misfortune or hardship. Surface roughness is a very salient attribute for touch. In fact, it is much more salient than other haptic attributes such as form or size (Klatzky, Lederman, & Reed, 1987). When touching a coarse surface, individuals experience haptic sensation of roughness from the friction between the skin and the surface. This initial sensory processing causes individuals to undergo mild discomfort due to the unusual haptic sensation (Lederman & Taylor, 1972). As a result, other discomfort in the environment may become more salient, and therefore, individuals are primed to pay enhanced attention to others' misfortune or hardship. This argument finds theoretical support from the "interconceptual mechanism" (Landau, Meier, & Keefer, 2010), which is largely based on the well-documented semantic association and spreading activation models (Collins & Loftus, 1975; Higgins, Bargh, & Lombardi, 1985; Wyer & Carlston, 1979). According to Landau et al. (2010), the impact of a physical experience on mental concepts operates on a semantic mapping process or "an interconceptual mechanism." Specifically, a firsthand physical sensation is likely to increase the accessibility of the mental concepts that exemplify the experience. Based on the spreading activation model, these activated concepts may then spread over to enhance salience of other semantically related concepts. For example, the experience of carrying weight directly enhances salience of the semantically matched concepts such as heavy. These activated elements may further activate other associative concepts such as important, which subsequently influence people's judgment of importance on an unrelated item (Ackerman et al., 2010; Zhang & Li, 2012). Similarly, holding a cup of hot coffee makes relevant concepts (e.g., warm) salient, which further spread to activate metaphorically related concepts such as a warm personality (Williams & Bargh, 2008). Moreover, physically washing hands primes the semantic concepts such as clean and washed, which in turn affect people's judgment of moral transgressions (Schnall, Benton, & Harvey, 2008; Zhong & Liljenquist, 2006). In the context discussed by this research, touching a coarse surface enhances salience of the corresponding semantic concepts such as roughness and discomfort. These activated elements spread over to prime the associative concepts such as misfortune and hardship. Therefore, if an unfortunate target is presented at this moment, the target becomes very salient and individuals who have experienced haptic roughness would pay heightened attention to the unfortunate.

We next theorize that such increased attention to those in misfortune or hardship subsequently results in greater empathy for them. According to the perception–action model of empathy (Preston & de Waal, 2002), attention to a social target is required for triggering strong empathic experience (Lamm, Nusbaum, Meltzoff, & Decety, 2007; Singer & Lamm, 2009). In particular, attending to a target's state automatically evokes the observer's relevant representations (e.g., understandings, feelings) of the situation, which enable comprehension and perspective taking of the social target's affective or psychological state (i.e., empathy; Eisenberg & Miller, 1987; Zahn-Waxler & Radke-Yarrow, 1990). In fact, some neuroscience studies have also lent support to the argument by revealing that empathy responses in the brain can be triggered by perceiving or imagining the emotional states of others (e.g., seeing someone else's pain), and in particular, when our attention is directed to the targets (Decety & Lamm, 2006; Singer et al., 2004). For instance, in an fMRI study by Gu and Han (2007), when participants saw pictures of hands in painful situations, they showed activation in the same brain areas as if they experienced the pain firsthand. However, when participants' attention was distracted away from the inflicted pain, no activation in those brain areas was observed. Similarly, in a follow-up electroencephalogram (EEG) study by Fan and Han (2008), whose paradigm we adopted in study 2, they also demonstrated that attention to the stimuli directly moderates participants' empathic responses.

Summarizing the theorizing above, we propose that haptic sensation of roughness, compared to smoothness, leads to greater empathy for the unfortunate others. This is likely to occur because haptic roughness (vs. smoothness) enhances particular attention to others' misfortune or hardship, which subsequently results in heightened empathy. Formally stated,