International Journal of Research in Marketing 34 (2017) 302–320

Contents lists available at ScienceDirect

IJRM

International Journal of Research in Marketing

journal homepage: www.elsevier.com/locate/ijresmar

Full Length Article

Temperature and emotions: Effects of physical temperature on responses to emotional advertising

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ARTICLE INFO

Article history:
First received on June 9, 2015 and was under review for 8½ months.
Available online 4 September 2016

Area Editor: Leonard Lee

Keywords:
Emotional advertising
International advertising
Environmental effects
Ambient temperature
Homeostasis

ABSTRACT

In colloquial speech, people frequently link emotions to temperature (e.g., "warm love" or "cold fear"). Likewise, in the business world, the use of emotionally warm and cold appeals reflects an ongoing trend in advertising. However, the conditions in which emotionally warm versus cold appeals are more effective remain unclear. Drawing on homeostasis theory, the authors investigate whether and why feeling physically warm versus cold influences the effectiveness of emotional advertising appeals. Using both laboratory experiments and field data, they show that emotions play a homeostatic role. Specifically, they demonstrate that the effects of particular emotional stimuli depend not only on physical temperatures per se but on homeostasis/thermoregulation. Namely, when consumers are below their homeostatic optimum (i.e., physically cold), they perceive emotionally cold stimuli less favorably (than emotionally warm stimuli) as these stimuli bring them further away from the optimum. Likewise, when consumers are above their homeostatic optimum (i.e., physically hot), they perceive emotionally warm stimuli less favorably (than emotionally cold stimuli) as these stimuli bring them further away from the optimum. Finally, once consumers are at their homeostatic optimum, they perceive both emotionally warm and cold stimuli similarly favorably. These results have implications for a wide range of marketing activities (in particular advertising) across seasons and international markets.

1. Introduction

In our colloquial speech and everyday life, emotions are linked to temperature (e.g., love "warms" our hearts, whereas fear leaves us "out in the cold"). This link is also prevalent in the business world, where the consideration of emotional temperature (i.e., emotional warmth and coldness) reflects an ongoing trend in advertising (Pham, Geuens, & De Pelsmacker, 2013; Smit, Van Meurs, & Neijens, 2006). For example, in 2011, Google aired a surprisingly emotionally warm spot for its Chrome browser with a father sending emotional messages to his newborn daughter (Warman, 2011). At the same time, emotionally cold appeals spread beyond traditional social marketing campaigns (e.g., anti-tobacco, anti-speeding) (Duhachek, Agrawal, & Han, 2012; Keller & Lehmann, 2008; Keller, Lipkus, & Rimer, 2003). A recent example is the emotionally cold spot by

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http://dx.doi.org/10.1016/j.ijresmar.2016.08.005
0167-8116/

Chipotle (a sustainable fast-food chain) featuring an animated scarecrow that becomes sad after observing chickens in a factory getting injections with chemicals (Forbes, 2013).

Academic research offers ample evidence suggesting that both emotionally warm and emotionally cold advertising appeals can be effective. Namely, emotional warmth increases positive attitudes toward the ad and brand and eventually boosts purchase intentions (Aaker, Stayman, & Hagerty, 1986; Biel & Bridgwater, 1990; Stayman & Aaker, 1993; Vanden Abeele & MacLachlan, 1994). Likewise, research also indicates positive effects of emotionally cold appeals in terms of attitude changes, persuasion, and subsequent behavior (Bruyneel, Dewitte, Franses, & Dekimpe, 2009; Dillard & Anderson, 2004; Tanner, Hunt, & Eppright, 1991). However, to date, no research has attempted to contrast the effectiveness of emotionally warm versus cold appeals or to identify the conditions in which each of the two appeals should or should not be used.

This gap in the literature is especially surprising given recent evidence suggesting that emotional appeals in general have a stronger effect on purchase decisions than reason-based appeals (Bülbül & Menon, 2010; Kwortnik & Ross, 2007; Trope & Liberman, 2003). Further, this gap creates the important managerial challenge of how and when to choose between emotionally warm versus cold appeals in advertising campaigns. In this paper, we attempt to make a first step toward closing this gap by investigating whether and why the effectiveness of *emotionally* warm versus cold ads depends on how *physically* warm versus cold people are.

While previous studies have focused on the role of cultural and economic factors in advertising (e.g., Deleersnyder, Dekimpe, Steenkamp, & Leeflang, 2009; Zarantonello, Jedidi, & Schmitt, 2013), the effects of climate on consumer behavior have been largely ignored until recently. Lately, several studies have established that temperature has a strong effect on product choice and evaluations (Cheema & Patrick, 2012; Hong & Sun, 2012; Zwebner, Lee, & Goldenberg, 2014) and that some individual emotions (e.g., romantic love [Hong & Sun, 2012]; loneliness [Zhong & Leonardelli, 2008]) are linked to physical temperature (Williams & Bargh, 2008). Further, meta-analytical findings published in *Science* document a link between soaring outside temperatures and particular emotions among humans leading to the rise of interpersonal violence (Hsiang, Burke, & Miguel, 2013). In sum, existing research has provided initial evidence for the compensatory role that emotions can play, but the questions of when and why this effect appears remain unanswered. Specifically, the boundary conditions of this effect, especially for cold emotions, are unclear. For example, some studies found a link between hot temperatures and cold emotions (Hsiang et al., 2013), while others did not (Hong & Sun, 2012). Relatedly, the underlying mechanism of the interaction between physical warmth/coldness and emotional warmth/coldness remains unclear (Huang, Zhang, Hui, & Wyer, 2014). The objective of this paper is to systematically investigate across a broad range of both warm and cold emotions how and why physical temperature interacts with humans' experience of different emotions and their subsequent effects on behavior. Because the effect of temperature on humans is omnipresent, the implications of this research reach across a wide range of human behaviors: from responses to stimuli in everyday life (e.g., advertising, Puccinelli, Wilcox, & Grewal, 2015) to human adjustments to climate.

The main contribution of this paper is to demonstrate that the effects of particular emotional stimuli depend not only on physical temperatures per se but on homeostasis/thermoregulation. We base our research on homeostasis theory and, in particular, on the thermoregulatory notion that humans strive for an internal temperature optimum (Tavassoli, 2009). Thermoregulation in humans involves maintaining an internal temperature optimum and reacting to deviations from this temperature optimum through different homeostatic responses. Bodily responses like shivering or behavioral responses like movement are examples of such homeostatic responses. However, in addition to these known bodily responses, recent evidence from the neuroscience literature shows that human perceptions of physical temperature are also linked to emotions. For example, the same brain region (i.e., the insular cortex) is associated with processing both physical temperature (Craig, Chen, Bandy, & Reiman, 2000) and emotional warmth and coldness (Williams & Bargh, 2008). Applying these insights from the neuroscience literature to thermoregulation, we propose that emotions serve as a homeostatic response—that is, our experiences of some emotions actually make us feel colder or warmer to compensate for the physical temperatures we are exposed to.

Using both laboratory experiments and field data (i.e., pretest responses provided by an international fast-moving consumer goods [FMCG] company), we demonstrate that physical temperature influences the effectiveness of emotionally warm versus cold advertising appeals. The results across three studies suggest that when a person is below his/her homeostatic optimum (i.e., physically cold), he/she perceives emotionally cold ads less favorably (than emotionally warm ads) as they bring him/her further away from the homeostatic optimum. Likewise, when a person is above his/her homeostatic optimum (i.e., physically hot), he/she perceives emotionally warm ads less favorably (than emotionally cold ads) as they bring him/her further away from the homeostatic optimum. Finally, once a person is at his/her homeostatic optimum, he/she perceives emotionally warm and cold ads similarly favorably.

Our research makes several important contributions to the literature. First, we contribute to the advertising literature by investigating how ambient temperature influences the effectiveness of emotionally warm versus cold advertising. Second, we shed light on the underlying homeostatic mechanism. Therefore, we contribute to homeostasis research (Parker & Tavassoli, 2000; Tavassoli, 2009) by demonstrating that emotions serve as homeostatic responses, which can alter temperature perceptions and restore inner physical temperature balance. Finally, we contribute to the recent and growing stream of literature on the impact of ambient temperature (Cheema & Patrick, 2012; Madzharov, Block, & Morrin, 2015; Zwebner et al., 2014) by demonstrating how ambient temperature influences consumers' liking of emotional stimuli in the environment. Our study has several important managerial implications, particularly for practitioners executing seasonal or international marketing campaigns, because differences in physical temperature that occur across seasons or regions may result in different consumer responses to the same advertising messages.