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Original Article

Parasite primes make foreign-accented English sound more distant to people who are disgusted by pathogens (but not by sex or morality)

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Abstract

To avoid disease, people should maintain close ties with ingroup members but maintain distance from outgroup members who possess novel pathogens. Consistent with this disease-avoidance hypothesis, pathogenic stimuli, as well as increased personal vulnerability to disease, are associated with xenophobic and ethnocentric attitudes. Researchers assume that this disease-avoidance process is an automatic emotional response that compels negative attitudes and behavioral avoidance. However, when outgroup contact can represent fitness costs or benefits, and when group membership is an uncertain cue to infection risk, it becomes a fitness advantage for a social perceiver to track group membership and thus infection risk. Given that accents can be a cue to group membership, we predicted that the perception of linguistic similarity to ingroup speakers and dissimilarity from outgroup speakers would increase with individual differences in pathogen disgust, and that this association would be most apparent when threat of disease was salient. This hypothesis was confirmed in two experiments. Further, the mechanism was domain specific—disgust due to sexual acts and moral violations did not moderate perceived linguistic distance. The disease-avoidance mechanism is not just an automatic disgust-based reaction; it also operates through the cognitive appraisal of social distance.

Keywords: Disease-avoidance hypothesis; Disgust; Pathogenic stimuli; Language

1. Introduction

Social animals possess adaptations for the recognition and avoidance of contagious diseases (Hart, 1990). For example, bullfrog tadpoles identify diseased conspecifics via chemical cues and swim away from them (Kiesecker, Skelly, Beard, & Preisser, 1999); Caribbean spiny lobsters avoid the dens of those infected with a virus, even before the host becomes infectious (Behringer, Butler, & Shields, 2006); and chimpanzees shun and exhibit fear reactions to conspecifics who display symptoms of disease (Goodall, 1986). Likewise, humans stigmatize (Bishop, Alva, Cantu, & Rittiman, 1991) and maintain physical distance (Mooney, Conn, & Swift, 1992) from people who are believed to harbor infectious diseases (see Kurzban & Leary, 2001; Oaten, Stevenson, & Case, 2009).

Research on humans suggests that disgust is an automatic emotional mechanism that evolved to enable disease avoidance (Curtis & Biran, 2001; Oaten et al., 2009; Rozin, Haidt, & McCauley, 2000). Indeed, blood, vomit, and people with fevers evoke automatic disgust reactions (Curtis, Aunger, & Rabie, 2004). Further, the disgust response is hypervigilant to disease cues and is stronger in some individuals than in others (Faulkner, Schaller, Park, & Duncan, 2004; Haidt, McCauley, & Rozin, 1994; Tybur, Lieberman, & Griskevicius, 2009). For example, the more that people perceive themselves as vulnerable to disease, the more negative their attitudes are towards people who have disease-connoting physical features such as disabilities (Park, Faulkner, & Schaller, 2003) and obesity (Park, Schaller, & Crandall, 2007).

Humans also use group membership to track infection risk. The assumption here is that it is fitness enhancing to stay close to ingroup members and avoid outgroup members who

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might harbor novel pathogens. Consistent with this hypothesis, the more people perceive themselves to be vulnerable to disease, the more they perceive unfamiliar outgroup members as unsuitable for immigration (Faulkner et al., 2004), and the more favorable their attitudes are towards ingroup members (Navarrete & Fessler, 2006). Further still, favorable attitudes towards ingroup members (Navarrete & Fessler, 2006) and unfavorable attitudes towards outgroup members (Faulkner et al., 2004) increase after people are exposed to disease primes. These findings suggest that avoidant responses to disease cues are calibrated to chronic individual differences in the potential costs of infection and with stimuli that temporarily increase the perceived risk of infection.

1.1. The present research

Our aim is to extend work on cues to disease avoidance found in intergroup relations. First, researchers (e.g., Faulkner et al., 2004; Navarrete & Fessler, 2006; Oaten et al., 2009; Park et al., 2007) have assumed that disease cues produce automatic disgust, and attitudinal and behavioral avoidance responses. However, there is reason to believe that cognition is an important part of the disease-avoidance process when infection risk is uncertain. This is likely to be true where group memberships are used as a cue to infection risk. Whereas disgust-eliciting cues like body products represent relatively certain fitness costs, contact with outgroups can represent a fitness benefit (i.e., we can acquire new mates, acquire new technologies, and trade) or a fitness cost (i.e., violence and disease). Further still, the degree of cost varies depending upon the outgroup encountered, and the same group can be more or less of a disease threat depending upon whether or not they are experiencing a disease outbreak. It would therefore be fitness enhancing if people could accurately track group membership as a means of managing infection risk. If this is true, a key component of a group-tracking process is the accurate identification of ingroup and outgroup members. Cognition that produces a basic "us versus them" social categorization would make it possible to distinguish ingroup from outgroup and thereby maintain close ties with healthy ingroup members and avoid diseased outgroup members.

To best track group membership, people should find ways of making the perceptual contrast between groups maximally clear. Doing so would decrease the likelihood of mistaking a diseased outgroup member for a healthy ingroup member. Critically, if this perceptual contrast is a functional process designed for disease avoidance, then it should be calibrated to the potential costs of infection. The greater the potential cost of making a mistake, the greater the perceptual contrast between ingroup and outgroup. Therefore, we predict that the more individuals are disgusted by pathogenic stimuli, the more they will perceive themselves as similar to ingroup members and dissimilar from outgroup members, and that these relationships will be most evident after exposure to stimuli that increase the salience of disease risk.

Second, an important consideration is the identification of the kinds of cues that would enable people to track group memberships accurately. Researchers (i.e., Faulkner et al., 2004; Navarrete & Fessler, 2006) have found that nationality is one such cue. However, there are reasons to believe that accents could also serve this purpose. A group-tracking disease cue must correlate with group membership, and the stronger the correlation, the more useful the cue would be for avoiding disease. Accents could play this role because they are difficult for nonnative speakers to replicate, and they are heuristic means of identifying group members by geographic location. More distant accents will be less familiar and thus more of a potential disease threat. Further, suggesting the importance of accents in social categorization, there is evidence that accents are a stronger cue to group membership than ethnicity (Rakić, Steffens, & Mummendey, 2011).

Third, we propose that the effects of disgust are highly domain specific. Researchers have relied exclusively on Faulkner et al.'s (2004) perceived vulnerability to disease measure (see also Duncan, Schaller, & Park, 2009). However, Tybur et al. (2009) have shown that people have independent disgust reactions to sexual acts, moral indiscretions, and pathogens. Because we assume that accents are a cue to infection risk, we expect that individual differences in pathogen disgust, perhaps sexual disgust, but not moral disgust, will moderate perceived linguistic distance.

Finally, research shows that the motivation to avoid physical danger also produces intergroup differentiation (Miller, Maner, & Becker, 2010). It is therefore important to employ an appropriate control that would enable us to isolate the pathogen-avoidance process from a threat like physical danger. We employ Schaller, Miller, Gervais, Yager, and Chen's (2010) disease and gun prime stimuli. The disease prime has been shown to promote an immune response. Compelling evidence for a domain-specific disease-avoidance reaction to native- and foreign-accented English would be that our predicted effects are stronger after exposure to a disease than gun prime.

2. Experiment 1

2.1. Methods

2.1.1. Participants and design

Fifty-eight undergraduate students (n=46 female, n=12 male) participated in exchange for course credit (M_{age}=21.07 years). Participants were randomly assigned to view either a slide show of images depicting disease symptoms (e.g., people sneezing, skin lesions) or guns (e.g., someone pointing a handgun at a camera). After viewing these images, participants were presented with voice recordings of three male speakers: a Floridian, a Scot, and a Sierra Leonean. Estimates of similarity to the speakers followed in turn. At the end, participants completed a three-dimension disgust scale (see Supplementary Materials for other dependent measures, available on the journal's website at www.ehbonline.org).