

# Specificity of Disgust Domains in the Prediction of Contamination Anxiety and Avoidance: A Multimodal Examination

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Although core, animal-reminder, and contamination disgust are viewed as distinct “types” of disgust vulnerabilities, the extent to which individual differences in the three disgust domains uniquely predict contamination-related anxiety and avoidance remains unclear. Three studies were conducted to fill this important gap in the literature. Study 1 was conducted to first determine if the three types of disgust could be replicated in a larger and more heterogeneous sample. Confirmatory factor analysis revealed that a bifactor model consisting of a “general disgust” dimension and the three distinct disgust dimensions yielded a better fit than a one-factor model. Structural equation modeling in Study 2 showed that while latent core, animal-reminder, and contamination disgust factors each uniquely predicted a latent “contamination anxiety” factor above and beyond general disgust, only animal-reminder uniquely predicted a latent “non-contamination anxiety” factor above and beyond general disgust. However, Study 3 found that only contamination disgust uniquely predicted behavioral avoidance in a public restroom where contamination concerns are salient. These findings suggest that although the three disgust

domains are associated with contamination anxiety and avoidance, individual differences in contamination disgust sensitivity appear to be most uniquely predictive of contamination-related distress. The implications of these findings for the development and maintenance of anxiety-related disorders marked by excessive contamination concerns are discussed.

*Keywords:* disgust; contamination; OCD; avoidance

DISGUST AS A BASIC EMOTION has distinct characteristics that may have evolved to prevent the oral incorporation of tainted foods (Rozin & Fallon, 1987; Woody & Teachman, 2000). However, more recent views suggest that disgust may represent an adaptive system for disease more broadly (Curtis, Aunger, & Rabie, 2004; Curtis, de Barra & Aunger, 2011; Fessler, Eng, & Navarrete, 2006). Research suggests that there may also be individual differences in this adaptive response (Olatunji & Broman-Fulks, 2007) that is stable over time (de Jong, Andrea, & Muris, 1997; Smits, Telch, & Randall, 2002). This stable trait has also been increasingly implicated in the development and maintenance of contamination fear, a common symptom of obsessive-compulsive disorder (OCD; Davey, 2011; Olatunji, Sawchuk, Lohr, & de Jong, 2004; Schienle, Stark, Walter, & Vaitl, 2003). For example, studies have found significant associations between disgust propensity and obsessive-compulsive

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washing even when controlling for various indicators of negative affect (Davey & Bond, 2006; Mancini, Gragnani, & D'Olimpio, 2001; Olatunji, Williams, Lohr, Connolly, Cisler, & Meunier, 2007). Longitudinal studies also support an association between disgust propensity and contamination concerns (Olatunji 2010) and behavioral studies have shown that disgust proneness mediates the association between contamination fear and avoidance of repulsive stimuli (Deacon & Olatunji, 2007; Olatunji, Lohr, Sawchuk, & Tolin, 2007).

Disgust is thought to serve a disease-avoidance function, as the emotion motivates avoidance of potential contaminants (Matchett & Davey, 1991; Oaten, Stevenson, & Case, 2009). This disease-avoidance function may explain the increased levels of disgust proneness observed in contamination obsessions and washing compulsions. Indeed, there is growing consensus that contamination concerns may represent a dysfunction in the appraisal and processing of disgust more broadly (Husted, Shapira, & Goodman, 2006, pp. 390). Although the majority of available cross-sectional, longitudinal, and behavioral studies have implicated disgust proneness in contamination obsessions and washing compulsions, some studies have failed to find a robust association (David, Olatunji, Armstrong, Ciesielski, Bondy, & Broman-Fulks, 2009). For example, Woody and Tolin (2002) found that disgust sensitivity levels among adult OCD patients were not significantly higher than those of patients with social phobia. Furthermore, Muris, Merckelbach, Schmidt, and Tierney (1999) found that the association between disgust proneness and OCD symptoms in children became nonsignificant when controlling for trait anxiety. Berle and colleagues (2012) also found that changes in disgust propensity between baseline and the 6-month follow-up assessment were associated with changes in overall self-reported OCD symptoms but not with changes in contamination-based OCD symptoms specifically. These discrepant findings may be due to multiple factors, including a failure to consider the multiple domains in which disgust proneness may be expressed.

Theoretical models and psychometric research suggest that disgust is not a unitary emotion (Olatunji & Sawchuk, 2005; Rozin & Fallon, 1987) and Rozin and colleagues (2008) have identified core, animal-reminder, and interpersonal disgust as distinct disgust domains. Core disgust elicitors are characterized by a real or perceived threat of oral incorporation and a reactive sense of offensiveness. Foods, bodily waste products, and small animals—particularly those associated with garbage and waste—are subsumed within this

category. These authors further posit that animal-reminder disgust elicitors consist of reminders of our own mortality and inherent animalistic nature. Attitudes and practices surrounding sex, injury to the body, violations of its outer envelope, and death are subsumed within this category. Interpersonal disgust is elicited by contact with individuals who are unknown, ill, or tainted by disease, misfortune, or immorality. The Disgust Scale–Revised (DS-R; Olatunji et al., 2007d) assesses disgust responses related to the three domains posited by Rozin and colleagues (2008). The *core* disgust domain of the DS-R is characterized primarily as a food-rejection response centered on oral incorporation of offensive stimuli (i.e., eating monkey meat). The *animal-reminder* disgust domain includes items about death and body-envelope violations that are related to a sense of aversion because they are reminders of human animality and mortality (e.g., touching a dead body). Lastly, Rozin and colleagues note that a key component of interpersonal disgust is disease probability, and this aspect bares striking similarity to the DS-R *contamination* disgust domain (i.e., accidentally drinking from someone else's cup).

Research examining the correlates of core, animal-reminder, and contamination disgust suggests distinctiveness among the three disgust domains. For example, core, animal-reminder, and contamination disgust have unique personality, behavioral, physiological, and clinical correlates (Olatunji, Haidt, McKay, David, 2008). More recent research has also shown that the three domains may be influenced by different genetic underpinnings (Kang, Kim, Namkoong, & An, 2010). Core disgust reflects disease spread by objects that may be orally incorporated, whereas contamination disgust appears to reflect disease spread by direct (or indirect) contact with people. Relative to animal reminder disgust, core and contamination disgust may have been adapted as part of a “behavioral immune system” that facilitates disease avoidance (Schaller & Park, 2011). Given a shared disease-avoidance mechanism, proneness to core and contamination disgust may be predicted to have a stronger association with contamination-related anxiety than proneness towards animal-reminder disgust. Preliminary self-report studies appear to support this view. For example, prior research has shown that contamination ideation and excessive washing is positively related to core disgust but not animal-reminder disgust (Olatunji, Williams, Lohr, & Sawchuk, 2005). Olatunji et al. (2007d) also found that patients with OCD washing concerns endorsed significantly higher levels of core and contamination disgust than either those with OCD without washing

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