

Specificity of disgust sensitivity in the prediction of behavioral avoidance in contamination fear

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Abstract

This study examined the specificity of disgust sensitivity in predicting contamination-related anxiety and behavioral avoidance. Participants high ($n = 26$) and low ($n = 30$) in contamination fear completed self-report measures of disgust sensitivity, contamination cognitions (overestimation of the likelihood and severity of contamination from everyday objects), anxiety, and depression. They then completed three randomly presented contamination-based behavioral avoidance tasks (BATs) that consisted of exposure to a used comb, a cookie on the floor, and a bedpan filled with toilet water. Results indicated that disgust sensitivity was significantly associated with anxious and avoidant responding to the contamination-related BATs. This association remained largely intact after controlling for gender, contamination fear group membership, anxiety, and depression. Contamination cognitions were also significantly related to BAT responses. However, this relationship was fully mediated by disgust sensitivity. These findings indicate that disgust sensitivity has a specific and robust association with contamination concerns commonly observed in obsessive compulsive disorder. The findings are discussed in the context of a disease-avoidance model.

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Introduction

The fear of contamination is the most common theme observed in obsessive-compulsive disorder (OCD; Rachman & Hodgson, 1980; Rasmussen & Eisen, 1992; Rasmussen & Tsuang, 1986). Recent theoretical developments have highlighted the complex, powerful, and persistent nature of this fear (Rachman, 2004). Obsessive thoughts regarding contamination in OCD often lead to compulsive safety behaviors (i.e., excessive washing, cleaning rituals) geared toward disinfection of the self and the environment (Rachman & Shafran, 1998). Safety behaviors in contamination-based OCD function to reduce fear and anxiety associated with distressing contamination-related obsessive thoughts ("I am filthy"). Safety behaviors associated with contamination fear may also consist of active (frequent hand-washing) and passive (always wearing gloves)

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avoidance strategies that function to prevent contact with potential contaminants. Safety behaviors in contamination-based OCD are likely related to overestimation of vulnerability to contaminants (i.e., dirt, germs, bacteria) and fear of rapid, spreading infection following contact with contaminants (Rachman, 1994; Riskind, Abreu, Strauss, & Holt, 1997; Tolin, Worhunsky, & Maltby, 2004).

The complexity and enduring nature of contamination fear has led to renewed interest in identifying factors that contribute to its development and maintenance (Rachman, 2004). Evidence suggests that specific cognitive vulnerability factors, such as the propensity to overestimate threat, may contribute to the onset of OCD (OCCWG, 2001). Thus, the tendency to overestimate the likelihood ("I will get sick if I don't wash my hands") and severity ("if I get sick I will die") of contamination may contribute to contamination-based OCD. Although contemporary models highlight the regulation of fear and anxiety and specific cognitive vulnerabilities in the development of contamination fear, recent theoretical and research developments suggests that disgust may also contribute to the fear of contamination (Olatunji & Sawchuk, 2005; Woody & Teachman, 2000).

Disgust, as a basic emotion, elicits a reliable physiological response, facial expression, and withdrawal/avoidance pattern (Olatunji & Sawchuk, 2005; Rozin & Fallon, 1987). The adaptive function of disgust is to protect the organism from contact with contaminated stimuli (Izard, 1993). Thus, it was proposed that disgust may contribute to the etiology of contamination fear in OCD (Phillips, Senior, Fahy, & David, 1998; Power & Dalgleish, 1997). Correlational studies have found support for this claim as measures of the general propensity to experience disgust (i.e., "disgust sensitivity") have been repeatedly shown to correlate with measures of contamination fear (Olatunji, Sawchuk, Lohr, & de Jong, 2004; Olatunji, Williams, Lohr, & Sawchuk, 2005; Sawchuk, Lohr, Tolin, Lee, & Kleinknecht, 2000; Schienle, Start, Walter, & Vaitl, 2003). Disgust also appears to predict contamination fear over and above anxiety and depression (e.g., Mancini, Gragnani, & D'Olimpio, 2001; Olatunji, Sawchuk, Arrindell, & Lohr, 2005; Thorpe, Patel, & Simonds, 2003; Tolin, Woods, & Abramowitz, 2006). One study examining disgust in patients with OCD found that OCD washers showed significantly higher disgust levels than non-anxious controls, and marginally higher disgust levels than a sample of non-washing OCD patients (Woody & Tolin, 2002).

The relation between disgust and contamination fear may be innate as OCD patients with contamination concerns often describe threat-relevant objects as "disgusting" rather than "frightening" (Sieg & Scholz, 2001; Tolin et al., 2004). The function of disgust in contamination fear has been described in the context of a disease-avoidance model given that disgust serves the adaptive function of preventing disease acquisition through avoidance of contact with and subsequent infection by contaminants (Matchett & Davey, 1991; Ware, Jain, Burgess, & Davey, 1994). However, evidence for this model is largely limited to correlational studies of self-report data. In efforts to extend the findings derived from self-report measures, neuroimaging studies have also begun to implicate disgust in contamination based OCD (Husted, Shapira, & Goodman, 2006; Phillips et al., 2000; Stein, Liu, Shapira, & Goodman, 2001). For example, Shapira et al. (2003) found that whereas brain activation during a threat-inducing task was similar across participants with OCD and healthy volunteers, the pattern of activation during a disgust-inducing task was significantly different in OCD subjects, including greater increases in the right insula, parahippocampal region, and inferior frontal sites.

Few studies have attempted to extend findings derived from self-report measures regarding the disgust-contamination fear relation to behavioral measures. In one study, Tsao and Mckay (2004) compared contamination fearful, high-trait anxiety, and low trait anxiety participants on six different behavioral avoidance tasks (BATs) corresponding to six domains of disgust (food, animals, body products, body envelope violations, death, and sympathetic magic). The authors reported that the contamination fearful group was more avoidant than the high trait anxiety group on the animal and sympathetic magic BATs and more avoidant than the low-trait anxiety group on the food, animal, body envelope violations, and death BATs. Similarly, Olatunji, Lohr, Sawchuk, and Tolin (2007) found that high contamination fearful participants demonstrated less compliance and less approach behavior than low contamination fearful participants on a series of eight disgust BATs. Furthermore, disgust emerged as a mediator of avoidance on the BATs among high contamination fearful participants.

Although there is mounting evidence in the literature implicating disgust in contamination fear, there are few experimental examinations of this relationship. Furthermore, there is a need for additional studies that examine the extent to which potential third variables (i.e., anxiety, depression) explain the

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