

Structural differentiation of disgust from trait anxiety in the prediction of specific anxiety disorder symptoms

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Abstract

Research has begun to implicate the role of disgust in the etiology of specific phobias and obsessive–compulsive disorder (OCD). However, it remains unclear if the association between disgust and specific anxiety disorder symptoms is an artifact of trait anxiety or a potential mechanism through which trait anxiety effects specific anxiety disorder symptoms. The present study employed structural equation modeling to differentiate disgust from trait anxiety in the prediction of four types of specific anxiety disorder symptoms in a non-clinical sample ($N = 352$). Results indicate that disgust and trait anxiety latent factors were independently related to spider fears, blood-injection-injury (BII) fears, general OCD symptoms, and OCD washing concerns. However, when both variables were simultaneously modeled as predictors, latent disgust remained significantly associated with the anxiety disorder symptoms, whereas the association between latent trait anxiety and the anxiety disorder symptoms became non-significant or was substantially reduced. Statistical tests of intervening variable effects converged in support of disgust as a significant intervening variable between trait anxiety and spider fears, BII fears, and OCD symptoms (particularly washing concerns). The relevance of these findings for future research investigating the role of disgust in specific anxiety disorders is discussed.

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Introduction

There has been emerging research interest in the literature on the role of disgust in the etiology of various anxiety disorders (Olatunji & Sawchuk, 2005; Woody & Teachman, 2000). This body of research suggests that the propensity to experience heightened disgust levels during exposure to aversive stimuli (i.e., disgust sensitivity) may operate as a vulnerability for certain anxiety disorders (de Jong & Merckelbach, 1998). Disgust is a basic emotion with distinct behavioral, cognitive, and physiological dimensions (e.g., Levenson,

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1992) that functions to prevent contamination and disease (Rozin, Haidt, & McCauley, 1993; Woody & Teachman, 2000). Accordingly, disgust may play a role in those anxiety disorders that involve concerns of contamination or disease, or stimuli that are associated with potential contamination or disease (e.g., Matchett & Davey, 1991). Consideration of disgust in the anxiety disorders may offer new theoretical and empirical directions beyond the traditional emphasis on fear (Rachman, 1990) or negative affectivity (e.g., Barlow, 2000).

One area of research that has investigated the role of disgust in anxiety disorders has focused on spider phobia (Woody, McLean, & Klassen, 2005). This line of research has demonstrated that spider phobics respond with both fear and disgust to phobic-relevant stimuli (Olatunji, 2006; Tolin, Lohr, Sawchuk, & Lee, 1997). Furthermore, it has been shown that during exposure to spiders, spider-fearful individuals respond with greater disgust-specific facial EMG activity (i.e., activity of the *m. levator labii*) than non-fearful participants (de Jong, Peters, & Vanderhallen, 2002). It has also been demonstrated that the disgust-related appraisals (i.e., fear of contamination) are a better predictor of spider fear than the fear of physical harm (de Jong & Muris, 2002). Information processing studies also suggest that spider-fearful participants demonstrate Stroop interference for disgust-related words (e.g., “DIRT”) that are unrelated to phobic concerns (Barker & Robertson, 1997).

Extensions of research on spider fear have also implicated disgust in the etiology of blood-injection-injury (BII) phobia (Olatunji, Sawchuk, de Jong, & Lohr, 2006; Olatunji, Sawchuk, Lohr, & Patten, 2007). Indeed, studies have shown that BII phobics report more disgust than fear when exposed to phobic-relevant stimuli than do non-phobics (Olatunji, Lohr, Sawchuk, & Westendorf, 2005; Sawchuk, Lohr, Westendorf, Meunier, & Tolin, 2002), and disgust has been found to contribute to fainting symptoms observed in a large majority of BII phobics (Page, 2003). A recent study that employed structural equations modeling found that the relation between disgust and fainting symptoms was found to be fully mediated by level of BII fears, regardless of participants' levels of anxious symptoms (Olatunji, Williams, Sawchuk, & Lohr, 2006). There is also evidence that BII phobics demonstrate a strong implicit memory bias for disgust-relevant stimuli (Sawchuk, Lohr, Lee, & Tolin, 1999). Facial expressions of BII phobics upon exposure to threat-relevant stimuli have also been found to be more associated with disgust rather than fear (Lumley & Melamed, 1992).

A third line of research has begun to examine the role of disgust in obsessive-compulsive disorder (OCD; Olatunji, Sawchuk, Lohr, & de Jong, 2004; Woody & Tolin, 2002). Several studies have found measures of disgust to be significantly related to OCD symptoms (Olatunji, Williams, Lohr, & Sawchuk, 2005; Schienle, Stark, Walter, & Vaitl, 2003) even after controlling for symptoms of fear (Olatunji, Lohr, Sawchuk, & Tolin, 2007; Olatunji, Tolin, Huppert, & Lohr, 2005), anxiety (Mancini, Gragnani, & D'Olimpio, 2001), and depression (Tolin, Woods, & Abramowitz, 2006). Neuroimaging studies also suggest that the neurocircuits involved in the processing of disgust-eliciting stimuli may be relevant to OCD and, in particular, contamination obsessions and washing compulsions (Husted, Shapira, & Goodman, 2006). These findings suggest that emotional processes beyond fear or trait anxiety may play an etiological role in disorders that involve the protection of the self from physical and psychological contamination.

Although the research literature supporting the role of disgust in the etiology of specific anxiety disorders continues to grow, this line of research is not without controversy (Olatunji & Sawchuk, 2005). One point of contention is that the mechanism by which disgust influences the development of anxiety disorder symptoms has yet to be fully elucidated. Recently, Davey, Bickerstaffe, and MacDonald (2006) provided evidence that disgust may influence the development of anxiety disorders by inducing a negative interpretational bias that is similar to the types of interpretational biases observed for fear. Others have suggested that disgust may impact specific anxiety disorders via the dread of contamination and disease (de Jong & Muris, 2002; Matchett & Davey, 1991). However, others contend that it is unlikely that disgust uniquely contributes to the etiology or maintenance of specific anxiety disorders beyond the effects of fear or trait anxiety. For example, Thorpe and Salkovskis (1998) argue that when stimuli normally associated with disgust (i.e., spiders) become the focus of phobic anxiety, then the disgust response becomes amplified as an epiphenomenon of fear. In a recent study, Edwards and Salkovskis (2006) found that exposure to a phobic stimulus resulted in increased self-reports of both fear and disgust, whereas exposure to a disgusting stimulus increased disgust, but not fear. Based on these findings, the authors concluded that the association between disgust and spider phobia may be a consequence of fear mediating the disgust response. Although it has been shown that trait anxiety and disgust

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