



Research paper

Disgust proneness predicts obsessive-compulsive disorder symptom severity in a clinical sample of youth: Distinctions from negative affect



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ABSTRACT

Background: Although studies have linked disgust proneness to the etiology and maintenance of obsessive-compulsive disorder (OCD) in adults, there remains a paucity of research examining the specificity of this association among youth.

Method: The present study employed structural equation modeling to examine the association between disgust proneness, negative affect, and OCD symptom severity in a clinical sample of youth admitted to a residential treatment facility ($N = 471$).

Results: Results indicate that disgust proneness and negative affect latent factors independently predicted an OCD symptom severity latent factor. However, when both variables were modeled as predictors simultaneously, latent disgust proneness remained significantly associated with OCD symptom severity, whereas the association between latent negative affect and OCD symptom severity became nonsignificant. Tests of mediation converged in support of disgust proneness as a significant intervening variable between negative affect and OCD symptom severity. Subsequent analysis showed that the path from disgust proneness to OCD symptom severity in the structural model was significantly stronger among those without a primary diagnosis of OCD compared to those with a primary diagnosis of OCD.

Limitations: Given the cross-sectional design, the causal inferences that can be made are limited. The present study is also limited by the exclusive reliance on self-report measures.

Conclusions: Disgust proneness may play a uniquely important role in OCD among youth.

1. Introduction

Obsessive-compulsive disorder (OCD) consists of recurrent obsessions and/or compulsions that interfere with daily functioning (*DSM-5*; American Psychiatric Association [APA], 2013). Obsessions are characterized by intrusive, repetitive thoughts, images, or impulses. Compulsions, however, are purposeful, repetitive behaviors or rituals performed in an effort to relieve distress associated with obsessions. It is widely accepted that the development of OCD may be attributed to a complex interaction of genetic, environmental, and psychological processes (Abramowitz et al., 2009). Although the origin of OCD is likely to be multifactorial, a growing body of research suggests that obsessions/compulsions observed among those with OCD may be partially the result of excessive disgust proneness (Olatunji et al., 2010a). Disgust proneness is defined as a personality trait that reflects the tendency to experience disgust frequently and intensely (van

Overveld et al., 2006). Available research suggests that disgust proneness is present to a greater or lesser extent in all individuals (Olatunji et al., 2007) and is relatively stable over time (de Jong et al., 1997). The origins of disgust proneness have historically implicated environmental factors (Rozin and Millman, 1987). Indeed, research has shown that disgust propensity may be transmitted inter-generationally beginning as early as infancy with a mother's verbal and nonverbal display of disgust in the presence of her child (Muris et al., 2013). However, recent work suggests the origins of disgust proneness likely reflects the interaction of genetics (Sherlock et al., 2016) and childhood socializing experiences where disgust responses are modeled excessively (Stevenson et al., 2010).

The link between disgust proneness and OCD has been consistently observed in adult samples (Cisler et al., 2009; Olatunji et al., 2010a, 2010b). Although this link appears to be most robust for the contamination variant of OCD (Deacon and Olatunji, 2007; Olatunji et al.,

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2004; Tolin et al., 2006), self-report measures of disgust proneness have been found to correlate moderately with hoarding, neutralizing, and ordering symptoms of OCD (Olatunji et al., 2010a, 2010b). Disgust proneness was also found to demonstrate small but significantly correlations with religious obsessions even after controlling for general fearfulness and cleanliness fears (Olatunji et al., 2005). Similarly, Olatunji et al. (2011a, 2011b) found that disgust proneness predicted an OCD symptom latent factor that consisted of washing concerns, checking and doubting, obsessing, neutralizing, ordering, and hoarding even when controlling for negative affect. Furthermore, there is now strong evidence that the association between negative affect and OCD symptoms is mediated by disgust proneness (Olatunji et al., 2007; Olatunji et al., 2010a, 2010b). These findings are consistent with the view that “OCD may represent a dysfunction in the appraisal and processing of disgust” (Husted et al., 2006, p. 390).

Disgust proneness may contribute to the development and maintenance of anxiety and related disorders early in development (Muris, 2006). Theoretical models posit that disgust proneness may contribute to the development of OCD may reinforcing disease-avoidance motives (Olatunji et al., 2011a, 2011b). Consistent with this view, research has shown that the experience of disgust contributes to the development of fear-related beliefs and subsequent avoidance behavior among youth (Muris et al., 2009). Research with children has also shown that the experience of disgust results in an increased inclination to interpret ambiguous situations in a more negative way (Muris et al., 2012). Despite basic findings that highlight potential mechanisms by which disgust proneness may confer risk for OCD in children, very few studies have actually examined the link between disgust proneness and OCD among youth. In an initial study, Muris et al. (1999) found a moderate association ($r = .30$) between disgust proneness and OCD symptoms in a nonclinical sample of children. However, this relationship became nonsignificant when controlling for trait anxiety. A subsequent study also found small, but significant, correlations (r 's = .20 for boys and .23 for girls) between a behavioral measure of disgust proneness and OCD symptoms in a nonclinical sample of children when controlling for neuroticism (Muris et al., 2008). Although controlling for more broad indicators of negative affect like neuroticism is likely to yield more robust effects between disgust proneness and OCD than when controlling for more specific indicators like trait anxiety, the modest associations observed in the limited research with youth suggests that it may be premature to conclude that disgust proneness in children is related to the development of OCD.

The modest association between disgust proneness and symptoms of OCD among youth may be the product of measurement limitations. Indeed, the available research linking disgust proneness and symptoms of OCD among youth has failed to employ an age-appropriate measure of disgust proneness that is designed specifically for children. Unfortunately, such studies have used simplified or age-downward extensions of adult measures, which may fail to capture important developmental nuances in disgust proneness. The Child Disgust Scale (CDS; Viar-Paxton et al., 2015) was recently developed to fill this important gap in the literature, and a comprehensive examination of psychometric properties suggests that the scale is a developmentally appropriate measure of disgust proneness that yields reliable and valid scores with children. A more recent study found that the CDS displays strong psychometric properties and is developmentally appropriate for use in pediatric clinical populations with OCD and anxiety disorders (Nadeau et al., 2017). Using the CDS, Viar-Paxton and colleagues (2015) found a strong association ($r = .40$) between disgust proneness and symptoms of OCD in a nonclinical sample. Nadeau and colleagues also found that scores on the CDS were significantly associated with OCD symptom severity ($r = .30$) in a clinical sample of youth.

Another important question is the extent to which disgust proneness is uniquely related to symptoms of OCD above and beyond the effects of negative affect. Negative affect may be defined

as the proneness to experience an array of negative emotional states as well as the proneness to activate defensive motivational systems (Craske, 2003). Importantly, various indicators of negative affect have been implicated in the development of OCD. For example, symptoms of depression have been found to robustly predict symptoms of OCD (Kim et al., 2012). In fact, previous research suggests that OCD and depressive symptoms co-occur primarily due to shared genetic factors (Bolhuis et al., 2014). Perhaps, as suggested by Rachman (1997), there is a bi-directional relationship between OCD and depression. To the extent that indicators of negative affect leads to the development of OCD, it remains unclear if disgust proneness confers risk for OCD above and beyond negative affect. Given that negative affect may represent a higher order generalized vulnerability factor for psychopathology more broadly whereas disgust proneness is viewed as proximal lower-order vulnerability for OCD specifically (Olatunji et al., 2011a, 2011b), unique effects for disgust proneness in predicting OCD symptoms may be expected. Examination of the extent to which disgust proneness does confer risk for the development of OCD above and beyond negative affect may have important implications for conceptualizing disgust proneness as a unique mechanism that should be the focus of treatment and prevention efforts.

The limited literature is inconsistent concerning the association between disgust proneness and OCD symptoms among youth. Given the recent availability of a developmentally appropriate measure of disgust proneness, the present study employs structural equation modeling (SEM) to examine the relation between disgust proneness and negative affect in the prediction of OCD symptom severity in a clinical sample of youth. Importantly, no study to date has examined the unique associations between disgust proneness and OCD symptom severity among youth using a clinical sample. It was predicted in the present study that disgust proneness would remain significantly associated with OCD symptom severity when both disgust proneness and negative affect are simultaneously modeled as predictors. It was also predicted that disgust proneness (proximal lower-order vulnerability) would mediate the association between negative affect (distal higher order generalized vulnerability) and OCD symptom severity. Lastly, it was predicted that the path from disgust proneness to OCD symptom severity when controlling for negative affect would be stronger among those with a primary diagnosis of OCD compared to those without a primary diagnosis of OCD.

2. Methods

2.1. Participants

The sample consisted of 471 participants (51.6% female) who presented for admission for treatment at the same residential facility. Participants that provided informant consent for their data to be used for research purposes were included. No participants were excluded. The mean age of the participants was 15.58 years ($SD = 1.18$), ranging from 12 to 18 years. The ethnicity composition was as follows: Caucasians ($n = 426$; 90.4%), Multiethnic ($n = 1$; .2%), Hispanic ($n = 13$; 2.8%), Black ($n = 3$; .6%), Asian ($n = 24$; 5.1%), Indian ($n = 1$; .2%), and bi-racial, including Caucasian Chinese ($n = 3$; .6%). The majority of participants' parents were married ($n = 351$; 74.5%), followed by divorced ($n = 88$; 18.7%) and single ($n = 15$; 3.2%). Seventeen participants (3.6%) did not report parental marital status. Fifty-one percent of the sample had a primary diagnosis of OCD, while 24% had a primary mood disorder and 18% had a primary anxiety disorder. Seven percent of the sample had another primary diagnosis, such as an eating disorder or attention deficit hyperactivity disorder (ADHD). Table 1 displays the rates of primary diagnoses in the sample. Diagnoses were derived via unstructured interviews conducted by child and adolescent psychiatrists specializing in OCD. This diagnostic approach has been shown to be reliable in previous research (Leonard et al., 2015).

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