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Disgust sensitivity and the HEXACO model of personality

Joshua M. Tybur *, Reinout E. de Vries

VU University Amsterdam, Department of Social and Organizational Psychology, Van der Boechorststraat 1, 1081 BT Amsterdam, The Netherlands

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ABSTRACT

In the current investigation, we test for relationships between three domains of disgust sensitivity (pathogen, sexual, and moral disgust) and the six dimensions of the HEXACO personality model in a large, demographically diverse Dutch sample. Our results extend upon previous investigations into the relationship between disgust sensitivity and personality in two important ways. First, in contrast with most previous investigations into disgust sensitivity, we measure sensitivities to sexual and moral disgust, two domains that elicit self-reports of disgust and facial expressions of disgust. Second, in contrast with the few investigations that have tested for relationships between sensitivities to sexual and moral disgust and Five Factor Model personality dimensions, we use the HEXACO personality model. We find that honesty–humility, a personality dimension assessed in the HEXACO model but not the Five Factor Model, accounts for unique variance in sensitivities to sexual and moral disgust, but not sensitivity to pathogen disgust. Other relationships between disgust sensitivity and personality are discussed, as are implications for understanding the fitness-relevant tradeoffs potentially underlying disgust sensitivity and personality.

1. Introduction

Observations that certain aspects of disgust are largely universal, such as the canonical disgust facial expression and the reliability with which certain objects (e.g., feces, vomit) elicit disgust, have inspired extensive work on the function and structure of disgust (see Tybur, Lieberman, Kurzban, & DeScioli, 2013, for an overview). However, within universal aspects of disgust lies variation. One example of such variation concerns the degree to which individuals are disgusted by common disgust elicitors (e.g., touching someone else's sweat)—that is, the degree to which individuals are "sensitive" to disgust. Much of the recent research in disgust has prioritized taxonomizing and understanding such individual differences (Haidt, McCauley, & Rozin, 1994; Olatunji et al., 2007; Tybur, Bryan, Lieberman, Caldwell Hooper, & Merriman, 2011; Tybur, Lieberman, & Griskevicius, 2009). In the current paper, we aim to better understand disgust sensitivity by examining how it relates to basic dimensions of personality. Specifically, we investigate the relationships between the three domains of disgust sensitivity proposed by Tybur et al. (2009) with both five and six factor models of personality.

1.1. Three domains of disgust sensitivity

Evolutionarily oriented disgust theorists have argued that disgust serves discrete, fitness-promoting functions (Rozin, Haidt, & McCauley, 2008; Tybur et al., 2009). One recent framework describes these domains as pathogen, sexual, and moral disgust, each of which have been shaped by distinct selection pressures (Tybur et al., 2013). In addition to suggesting that different computational processes underlie these domains, this framework also implies that, because disgust responses reflect distinct tradeoffs across domains, individual differences in disgust sensitivity might vary along these domains. That is, people that relatively strongly avoid pathogens, and who pay the costs for doing so (e.g., by constraining diet and social interactions), may not be the same people that relatively strongly avoid fitness-compromising sexual interactions, and who pay distinct costs for doing so (e.g., search costs after rejecting mates), and they may not be the same people that relatively strongly condemn rule violations, and who pay other distinct costs for doing so (e.g., retribution from condemnation targets and their allies; see DeScioli & Kurzban, 2013).

Tybur et al. (2009) tested this possibility by first gathering a wide range of items that were nominated by a panel as "disgusting." Multiple factor analyses on the degree to which participants rated these items as disgusting indicated that individual differences vary along three dimensions, one of which included items similar to those on Haidt et al.'s (1994) Disgust Scale (cues to pathogens, such as feces, mold, and wounds), one of which included sexual items (e.g., being touched on the thigh by a stranger), and one of which included moral violations (e.g., lying, cheating, stealing). Rather than eliminating sexual and moral items because they did not load on the same factor as items more directly related to pathogen cues (cf. Haidt et al., 1994; Olatunji et al., 2007), Tybur et al. (2009) retained such items in the process of developing the Three Domain Disgust Scale (TDDS). Since the development of

* Corresponding author. Tel.: +31 (0) 205983088.
E-mail address: j.m.tybur@vu.nl (J.M. Tybur).

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the TDDS, multiple investigations have used an evolutionary framework to generate and test predictions of unique relationships between these three domains of disgust sensitivity and other constructs (e.g., DeBruine, Jones, Tybur, Lieberman, & Griskevicius, 2010; Kurzban, Dukes, & Weeden, 2010; Pond et al., 2012; Tybur, Merriman, Caldwell, McDonald, & Navarrete, 2010).

1.2. Disgust sensitivity and personality

Although individual differences in disgust sensitivity vary along domains predicted by theory, questions remain regarding why individuals vary in disgust sensitivity and how to interpret these individual differences. One approach to better understanding individual differences involves examining their relationships with basic dimensions of personality. A lack of a relationship between the three domains of disgust sensitivity and fundamental personality dimensions may imply that these individual differences do not share a similar functional, genetic, or developmental origin, whereas strong overlap between the disgust and personality concepts may entail that they are influenced by similar processes.

A handful of studies have examined how disgust sensitivity, as operationalized by the Disgust Scale (Haidt et al., 1994), relates to measures of personality such as Eysenck's EPQ, the BFI, and the NEO-FFI (Druschel & Sherman, 1999; Haidt et al., 1994; Olatunji, Haidt, McKay, & Bieke, 2008). However, inferences concerning the relationship between personality and disgust sensitivity based on these studies may be limited by two aspects of the Disgust Scale. First, the Disgust Scale does not assess sexual or moral content, both of which are rated as disgusting in self-report measures (Haidt et al., 1994; Tybur et al., 2009) and elicit facial expressions of disgust (Borg, de Jong, & Schultz, 2010; Cannon, Schnall, & White, 2011; Chapman, Kim, Susskind, & Anderson, 2009). Second, half of the items on the Disgust Scale concern the degree to which an individual is bothered by, upset by, or generally avoidant of situations peripherally related to disgust (e.g., avoiding walking through a graveyard). Such item content may influence previously observed relationships between the disgust sensitivity and, for example, neuroticism (e.g., $r = .45$ and $r = .46$, as reported by Druschel and Sherman (1999) and Olatunji et al. (2008), respectively). Indeed, other methods of assessing disgust sensitivity that do not rely on such item content report null or weak relationships with neuroticism (e.g., Hennig, Possel, & Netter, 1996; Olatunji et al., 2012; Tybur et al., 2011). The development of the TDDS offers two potential solutions to these shortcomings. First, the TDDS includes domains of sensitivity to sexual and moral disgust. Second, the TDDS does not include item content related to being bothered, upset, or avoidant of situations, but rather straightforwardly asks respondents to indicate how disgusted they are by acts and concepts described within items.

Two studies have investigated how the TDDS relates to Five Factor Model (FFM) dimensions, including Olatunji et al. (2012), who examined how the TDDS relates to the BFI, and Tybur et al. (2011), who examined how the TDDS relates to the NEO PI-3. Additionally, Tybur et al. (2009) compared a preliminary version of the TDDS with the BFI during instrument development. Although these studies investigated how a wider breadth of disgust sensitivities relate to personality, they are also limited by two factors: their reliance on the FFM of personality and on samples of university students. In the current study, we investigate relations between personality and disgust sensitivity using the HEXACO model of personality (Lee & Ashton, 2004) and a more age- and education-diverse sample.

1.3. The HEXACO model of personality and our main predictions

Lexical research using a number of different languages has shown that the personality space may actually be better represented by six, rather than five, dimensions (Ashton et al., 2004; Lee & Ashton, 2008). These six dimensions are known by the HEXACO acronym (Honesty–humility, Emotionality, eXtraversion, Agreeableness, Conscientiousness, and Openness to experience). The most notable difference between Five Factor Models and the HEXACO model is the addition, in the HEXACO model, of the honesty–humility factor, which is associated with tendencies to be sincere, fair, modest, and greed-avoidant. Through its addition of honesty–humility, the HEXACO model has been able to better predict behaviors and attitudes that are associated with egoistic, antisocial, and outright delinquent or criminal tendencies than the FFM has (e.g., Ashton & Lee, 2008).

With respect to disgust sensitivity, our primary prediction concerns the relations between the honesty–humility factor of the HEXACO model and the Sexual Disgust and Moral Disgust factors of the TDDS. Each of the investigations that have tested how sensitivities to pathogen, sexual, and moral disgust relate to personality (Olatunji et al., 2012; Tybur et al., 2009, 2011) have reported statistically significant relationships between agreeableness and both sensitivity to sexual disgust and sensitivity to moral disgust. This might imply that individuals who are more warm, kind, and sympathetic report greater disgust toward sexual and immoral acts. However, measures of agreeableness often combine characteristics such as kindness and warmth with aspects of honesty–humility, such as modesty and straightforwardness. Indeed, in examining correlations between the six NEO PI-3 Agreeableness facets and TDDS Sexual Disgust and Moral Disgust factors, Tybur et al. (2011) found that Sexual Disgust and Moral Disgust were most strongly related to Agreeableness facets most relevant to honesty–humility (e.g., Modesty, Straightforwardness).

We predict that personality models including honesty–humility will account for significantly greater variance in sensitivities to sexual and moral disgust—but not sensitivity to pathogen disgust—for three reasons. First, empirical findings suggest that honesty–humility accounts for unique variance in some sexual attitudes (e.g., being open to short-term sexual liaisons and being open to committing infidelity; Bourdage, Lee, Ashton, & Perry, 2007) and some moral violations, such as workplace delinquency (e.g., stealing from employers, committing vandalism; Ashton & Lee, 2008; Lee & Ashton, 2004). Second, as individuals high in honesty–humility are less likely to pursue the types of behaviors that elicit sexual and moral disgust, endorsing proscriptions against such behaviors might more modestly constrain those individuals' fitness interests (cf. DeScioli & Kurzban, 2013; Kurzban et al., 2010). Further, individuals who are more sincere, fair, modest, and greed-avoidant (facets of honesty–humility) may pay higher costs (e.g., in terms of being exploited) when others engage in such behaviors, and they might therefore be more likely to condemn and endorse punishment of such behaviors (e.g., with expressions of moral disgust). Third, the types of fitness costs imposed by non-reciprocators, cheaters, braggarts, etc. are distinct from the types of fitness costs imposed by infectious disease, and we thus predict that honesty–humility will not account for unique variance in sensitivity to pathogen disgust.

2. Methods

To test the above-stated predictions, and to more generally assess the relationship between basic dimensions of disgust sensitivity and personality, we examined correlations between the TDDS, the HEXACO PI-R, and the 5DPT in a large sample that varied on age and education. 2.1 Sample and procedure.

Data were collected in two waves. In the first wave, data were obtained from 1,352 respondents (50.3% women; $M_{age} = 47.9$ ($SD = 15.0$), range: 19–88 years) from a Dutch internet panel, which consisted of people from a wide variety of age and