The Disgust Propensity and Sensitivity Scale–Revised: An examination of a reduced-item version

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ABSTRACT

The Disgust Propensity and Sensitivity Scale–Revised (DPSS–R [Pers. Indiv. Differ. 41 (2006) 1241–1252]) is a new assessment tool thought to assess two distinguishable factors contributing to disgust reactions, Disgust Propensity and Disgust Sensitivity. Extant data though indicate the presence of four unreliable DPSS–R items. The present study examined the psychometric properties of a reduced-item version of the DPSS–R, in which these four problematic items were removed, using data from two large independent samples of nonclinical college students. Results from Study 1 revealed that the reduced-item DPSS–R factor structure provided more favorable goodness-of-fit indices than the two previous full-length DPSS–R factor structures. In Study 2, the reduced-item DPSS–R scales showed good reliability, stronger relationships with symptoms of disgust-relevant than fear-relevant phobias, and adequate incremental concurrent validity in predicting symptoms of disgust-relevant phobias. The present study suggests that the reduced-item DPSS–R is both reliable and valid, and likely addresses the limitations of the full-length version.

During the past decade, there has been a renewed interest in the distinction between fear and disgust, and the relationship of these emotions with several psychological disorders (see Woody & Teachman, 2000, for a review). To better understand their role in psychological disorders, valid self-report measures are needed. Although self-report measures assessing individual differences underlying fear reactions have been well established (e.g., Anxiety Sensitivity Index-3; Taylor et al., 2007), several shortcomings of commonly used self-report measures in the disgust domain have recently been noted.

First, using a strategy for understanding the process that leads to fear reactions (Reiss, 1991), disgust reactions can be seen as a product of both disgust propensity (i.e., how easily one is disgusted) and disgust sensitivity (i.e., how bothered one is by their disgust). Commonly used measures of disgust (e.g., Disgust Scale; Haidt, McCauley, & Rozin, 1994), though, have been criticized for only assessing disgust propensity (DP). Second, researchers have suggested that item overlap between existing disgust measures (e.g., *It would bother me to see a rat run across my path in a park*) and frequently assessed symptomatology (e.g., fear of animals) may inflate correlations (Olatunji, Cisler, Deacon, Connolly, & Lohr, 2007; van Overveld, de Jong, Peters, Cavanagh, & Davey, 2006). These shortcomings have increased the need for researchers to develop new self-report measures assessing disgust.

The 32-item Disgust Propensity and Sensitivity Scale (DPSS; Cavanagh & Davey, 2000) was developed to assess disgust propensity and disgust sensitivity (DS) separately, and to include only items that did not share substantial overlap with symptoms of psychopathology. The DPSS was subsequently revised by van Overveld et al. (2006) using data from two large (N's = 487 and 480) nonclinical college student samples from the Netherlands. In revising the DPSS, van Overveld et al. initially exposed the measure to an exploratory factor analysis (EFA), and used both empirical (i.e., factor loadings) and theoretical rationale to reduce its item pool. The resulting 16-item revised version of the DPSS (i.e., the Disgust Propensity and Sensitivity Scale–Revised; DPSS–R) included two eight-item scales that appeared to assess DP (e.g., *I experience disgust*) and DS (e.g., *It scares me when I feel faint*), respectively. van Overveld et al. subsequently validated this two-factor solution using a confirmatory factor analytic approach, with the second student sample, by demonstrating that it provided a better fit to the data than a one-factor solution.

The DPSS–R scales showed a moderate to strong intercorrelation ($r = .59$) and adequate internal consistency (DP: Cronbach's $\alpha = .78$; DS: $\alpha = .77$). The two scales also shared moderate relations (magnitude of r's ranging from .16 to .37) with measures of disgust, spider fears, and blood-injection fears, and accounted for unique variance over extant disgust measures in predicting both spider and blood-injection fears. Each of the DP and DS scales also

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accounted for unique variance in predicting blood-injection fears, and the DP scale uniquely predicted spider fears (van Overveld et al., 2006). Based on these results, the DPSS–R appears to be a valid and useful measure assessing two distinguishable factors contributing to disgust reactions.

Olatunji et al. (2007), using data from a large (*n* = 340) nonclinical college student sample from the United States, further examined the DPSS–R factor structure and investigated the relations between the DPSS–R scales and a broader range of indices of psychopathology. Results from an EFA indicated a two-factor solution, with each factor having primary loadings from eight items, that differed from the factor structure identified by van Overveld et al. (2006). Olatunji et al. reported good convergence (coefficient of convergence = .87; Gorsuch, 1983) between their DP factor and the DP factor found by van Overveld et al. (2006), but the DS factor found by Olatunji et al. demonstrated only modest convergence (coefficient of convergence = .74) with the DS factor found by van Overveld et al. Four items (i.e., two items from each scale) had primary loadings on different factors in the studies conducted by van Overveld et al. and Olatunji et al. These four items were item 4 (*I think disgusting items could cause me illness/ infection*), item 9 (*When I experience disgust, it is an intense feeling*), item 12 (*I become disgusted more easily than other people*), and item 13 (*I worry that I might swallow a disgusting thing*).

Olatunji et al. (2007) found that the DP and DS scales (constructed based upon the primary loadings shown in their study) showed a strong relation (*r* = .66) with one another, while sharing moderate relations (*r*'s ranging from .14 to .37) with a broad range of symptoms of fear and anxiety (e.g., spider fears, contamination fears, and injection-phobia anxiety). Furthermore, these correlations remained significant after removing the effects of general distress. The DP and DS scales also emerged as differential predictors of some of the fear and anxiety symptoms.

Despite the studies conducted by van Overveld et al. (2006) and Olatunji et al. (2007), important questions regarding the DPSS–R remain. First, it was surprising that different factor structures emerged between the two studies. Olatunji et al. provided a few tenable explanations for the conflicting findings, including cross-cultural differences, as van Overveld et al. used samples from the Netherlands and Olatunji et al. used a sample from the United States, and questions regarding the face validity of some of the DPSS–R items that loaded differently on the two factors. More importantly, concerns surrounding the factorial validity of the DPSS–R led Olatunji et al. to conclude that "subsequent revisions of the DPSS–R would benefit from examination of the integrity of the measure without these items" (p. 927). The applicability of a reduced-item DPSS–R, in which items 4, 9, 12, and 13 are removed, has yet to be examined.

Second, if the reduced-item DPSS–R provides a more stable factor structure than the previously found full-length factor structures, it would be vital to establish its reliability and validity. Given the noted similarities between fear and disgust (e.g., Woody & Teachman, 2000), it is important for measures of disgust-relevant constructs to show some specificity in their relationship with disgust-relevant criterion. For example, phobias involving small animal (Matchett & Davey, 1991; Ware, Jain, Burgess, & Davey, 1994) and blood-injection-injury (Page, 1994; Sawchuk, Lohr, Westendorf, Meunier, & Tolin, 2002) are believed to be related to disgust reactions, and phobias involving predatory animals (Davey et al., 1998; Webb & Davey, 1993) are believed to be related to fear reactions. To demonstrate adequate representational validity (Foster & Cone, 1995), the reduced-item DPSS–R scales should thus have significantly stronger relations with disgust-relevant phobia symptoms than with fear-relevant phobia symptoms.

Third, despite the purported similarities (van Overveld et al., 2006) between the DPSS–R and anxiety sensitivity (AS), the relation between these two constructs is currently unknown. AS represents the fear of arousal-related sensations and has been hypothesized to be central in a number of anxiety disorders (Reiss, 1991; Taylor, 1999), including some specific phobias (e.g., Craske & Sipsas, 1992; Valentiner, Telch, Ilai, & Hehmsoth, 1993). Assuming the DP and DS scales are truly assessing unique facets of disgust per se, they should both demonstrate unique variance over a conceptually similar fear-based construct, like AS, in predicting symptoms of disgust-relevant phobias. The similarity of some items on the Anxiety Sensitivity Index-3 (ASI-3; Taylor et al., 2007; e.g., *I think it would be horrible for me to faint in public*) and the DPSS–R (e.g., *It scares me when I feel faint*) raise concern about the uniqueness of these constructs.

In Study 1, we further examined the DPSS–R factor structure, with a large nonclinical United States college student sample, using a series of confirmatory factor analyses. This data analytic approach allowed us to examine the adequacy of three DPSS–R models. These models were the original factor structure reported by van Overveld et al. (2006), the factor structure reported by Olatunji et al. (2007), and a reduced-item factor structure, in which the four noted unreliable items (i.e., items 4, 9, 12, and 13; Olatunji et al., 2007) were removed. Given that the 12-items comprising the reduced-item DPSS–R reliably loaded on the same factors in the studies conducted by both van Overveld et al. and Olatunji et al., while items 4, 9, 12, and 13 did not, we predicted that the reduced-item DPSS–R factor structure would show the best fit to the data among the three tested models.

In Study 2, we investigated the reliability and validity of the reduced-item DPSS–R with a separate large nonclinical United States college student sample. This study tested the internal consistency of the reduced-item DPSS–R scales, and their relations with symptoms of both disgust- and fear-relevant phobias. We predicted that the reduced-item DPSS–R scales would share significantly stronger relationships with symptoms of phobias in the disgust-relevant domain (i.e., spiders, rats, and blood) than symptoms of phobias in the fear-relevant domain (i.e., dogs, lions, and heights). We also sought to investigate the incremental concurrent validity of the reduced-item DPSS–R scales in predicting both sets of phobia symptoms in Study 2. We predicted that the reduced-item DPSS–R scales would show incremental validity over both one another and AS in predicting symptoms of disgust-relevant, but not fear-relevant, phobias. Based on the idea that "disgust propensity and sensitivity may interact and predict disgust-related psychopathological complaints" (van Overveld et al., 2006, p. 1242), Study 2 examined the predictive validity of the interaction effect of the reduced-item DP and DS scales as well. Finally, the results obtained using the reduced-item DPSS–R scales were compared to the results when using the two full-length factor structures of the measure (i.e., Olatunji et al., 2007; van Overveld et al., 2006).

1. Study 1

1.1. Method

1.1.1. Participants

The sample consisted of 363 college students from a Midwestern university. Participants were introductory psychology students who received partial course credit for completing the questionnaires. The mean age of the sample was 19.7 years (S.D. = 2.3). The sample was 50.4% female, and was predominantly Caucasian (66.1%).

1.1.2. Measures and procedure

All participants completed a fixed-order questionnaire packet that included a demographics questionnaire and the DPSS–R (van