



BLOOD-INJECTION-INJURY PHOBIA AND FEAR OF SPIDERS: DOMAIN SPECIFIC INDIVIDUAL DIFFERENCES IN DISGUST SENSITIVITY

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Summary—We investigated whether disgust sensitivity is associated with blood-injection-injury (BII) and spider fear. We also explored whether the relationship between disgust sensitivity and phobic fears is domain specific. Ninety-six undergraduates (all women) completed the Disgust Questionnaire (DQ) (Rozin *et al.*, 1984), The Disgust Scale (DS) (Haidt *et al.*, 1994), the Spider Phobia Questionnaire (SPQ) (Klorman *et al.*, 1974), and the Blood-Injury Phobia Questionnaire (BIQ) (Merckelbach *et al.*, submitted). No relationship was evident between DQ scores and BII fear. Yet, BII fear was found to be related to the Body Envelope Violations subscale of the DS. Spider fear was found to be associated with DQ scores and the Animal sub-scale of the DS. Thus, the relationship between phobic fears and high disgust sensitivity was found to be domain specific with BII fear being related to animal-reminder disgust and spider fear to oral-centred disgust. © 1998 Elsevier Science Ltd. All rights reserved

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INTRODUCTION

A series of studies have demonstrated that disgust sensitivity (as measured with the Disgust Questionnaire, DQ) (Rozin *et al.*, 1984) correlates with fear of fear-relevant but harmless animals (Matchett and Davey, 1991). In line with this, women with a clinically diagnosed spider phobia were found to have substantially higher levels of disgust sensitivity (i.e., lower DQ scores) than non-phobic controls (Mulken *et al.*, submitted; Merckelbach *et al.*, 1993). Note, in passing, that the items of the DQ do not refer to spiders, fear or phobia. Rather, they are concerned with food-rejecting tendencies.

The relationship between disgust sensitivity and fear of spiders may be explained by assuming that spiders are most likely to acquire disgust-evoking properties for people with relatively high levels of disgust sensitivity. Following this line of reasoning, disgust sensitivity facilitates the development of spider phobia. The finding that DQ scores of spider phobics remain unaffected by successful treatment (de Jong *et al.*, 1997; Merckelbach *et al.*, 1993) sustains the idea that disgust sensitivity is a vulnerability factor rather than a mere epiphenomenon of phobic fear.

Several authors have argued that disgust and disgust sensitivity might also be involved in blood-injection-injury (BII) phobia (Page, 1994). Clearly, the stimuli that are feared by BII phobics such as blood and injuries, typically evoke feelings of disgust (Gross and Levenson, 1993). In addition, many BII phobics show a diphasic cardiovascular response when exposed to this particular class of stimuli. That is, after a brief fear-related increase in heart rate and blood pressure, there is a rapid decrease below baseline levels (Öst and Hellström, 1997). Such a heart rate deceleration is likely to occur in disgust but not in fear (Levenson, 1992). Both types of observations are in line with the idea that BII phobics' aversion of blood, injury, etc., is at least partly fuelled by disgust rather than fear. From such a perspective, high disgust sensitivity is likely to facilitate the acquisition of BII phobia (*cf. supra*).

The finding that BII phobics are liable to faint in the presence of blood or injury (e.g., Kleinknecht *et al.*, 1996), also points to the possible involvement of disgust in BII phobia. That is, strong and

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unopposed (parasympathetic) disgust reactions may underlie this emotional fainting. For example, Page (1994; p. 452) speculated that "when the (parasympathetic) processes underlying disgust combine with a homeostatic increase in parasympathetic activity (which counteracts the initial sympathetically mediated fight or flight response), the joint effect may produce a pattern of vascular and vagal responding responsible for fainting". From such a perspective, high disgust sensitivity results in a relatively low threshold for fainting in the presence of pertinent stimuli, which, in turn may facilitate the development of blood-injury phobia.

Matchett and Davey (1991) obtained preliminary evidence for the hypothesized relationship between disgust sensitivity and BII-fear. In a student sample, they found that low DQ scores (i.e., high disgust sensitivity) were associated with higher scores on the BI(I) items of the Fear Survey Schedule (FSS), (Wolpe and Lang, 1964). However, in three subsequent studies using samples of undergraduate students as well as clinically diagnosed dental phobics, we could not substantiate the claim that low DQ scores are related to BII fear or fainting (Merckelbach *et al.*, submitted). One explanation for the apparent absence of a robust relationship between DQ scores and BII fear might be that the DQ does not cover all relevant aspects of disgust sensitivity. That is, the DQ is restricted to one type of disgust elicitor: food contamination (by animal products). Yet, there is considerable evidence that revulsion associated with disgust extends far beyond this domain of contaminated food products. Therefore, Haidt *et al.* (1994) recently developed a broader index of disgust sensitivity, the Disgust Scale (DS), which covers 7 domains of disgust elicitors (i.e., food, animals, body products, sex, body envelope violations, death, and hygiene).

The domains of disgust elicitors were found to be relatively independent (Haidt *et al.*, 1994). Therefore, it might well be that BII and spider fear are related to high disgust sensitivity within different domains. To explore this possibility, subjects in the present study were asked to complete both the DQ and the DS (as indices of disgust sensitivity). In addition, we assessed BII as well as spider fear. As a subsidiary issue, we also explored whether the relationship between disgust sensitivity and phobic fear is mediated by general trait anxiety. Note that there is some evidence for a connection between disgust sensitivity and general traits such as neuroticism (Hennig *et al.*, 1996). The question arises, therefore, to what extent this connection can account for the correlation between phobic fears and disgust sensitivity.

METHOD

Participants

Participants were undergraduate students of the Faculty of Health Sciences of Maastricht University ($N = 96$). For pragmatic reasons we only included female subjects in our sample. As more than 90% of the students of our Faculty are women, it would be rather difficult to find sufficient male volunteers to allow for reliably evaluating possible gender effects. Therefore, we preferred to select a homogeneous sample of female subjects. They were paid for participating in this study. Their mean age was 18.5 years ($r = 17-22$).

Assessment

Participants were tested in small groups (5–10 students). They completed the following questionnaires:

Disgust Questionnaire (DQ). The DQ (Rozin *et al.*, 1984) is a self-report measure of disgust and contamination sensitivity. It consists of 24 questions about specific events in which food is involved. The DQ asks participants to rate on a 9-point scale how much they would like to eat "contaminated" food items (1 = do not want to eat at all; 9 = would like to eat very much). A sample item would be: "How much would you like to eat your favourite soup after it has been stirred by a new fly swatter?" Scores are summed and yield a total score between 24 (maximum disgust sensitivity) and 216 (minimum disgust sensitivity). To assess spiders' disgust-evoking status we added two items to the original DQ (DQ-spider cf. de Jong *et al.*, 1997): "How much would you like to eat your favourite chocolate bar after a spider has walked across the bar when it is still wrapped in its package?" and "How much would you like to eat your favourite chocolate bar after a spider has walked across the unpacked bar?"

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