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## Emotional responding to fearful and disgusting stimuli in specific phobics

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### Abstract

Individuals with small animal and blood-injection-injury (BII) phobias respond to phobia-relevant stimuli with both fear and disgust. However, recent studies suggest that fear is the dominant emotional response in animal phobics whereas disgust is the primary emotional response in BII phobics. The present study examined emotional responding toward pictures of spiders, surgical procedures, and two categories of general disgust elicitors (rotting food and body products) among analogue spider phobics, BII phobics, and nonphobics. Dominant emotional responses to phobia-relevant stimuli clearly differentiated the groups, as spider phobics were more likely to be classified as primarily fearful when rating pictures of spiders (74%), whereas BII phobics were more likely to be classified as primarily disgusted when rating pictures of surgical procedures (78%). Discriminant function analyses revealed that disgust ratings, but not fear ratings, of the phobic pictures were significant predictors of phobic group membership. Both phobic groups were characterized by elevated disgust sensitivity toward video and pictorial general disgust elicitors. Implications and suggestions for continued research examining fearful and disgusting stimuli in specific phobia are outlined. © 2002 Elsevier Science Ltd. All rights reserved.

*Keywords:* Fear; Disgust; Phobia

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## 1. Introduction

Fear and disgust are discrete emotional states characterized by well-defined physiological, behavioural, and subjective dimensions (Ekman, 1992; Izard, 1977). The emotion of fear involves sympathetic activation (Ekman, Levenson, & Friesen, 1983), escape and avoidance (Mowrer, 1960), and perceived threats of being attacked and harmed (Hugdahl & Öst, 1985). Disgust, conversely, involves parasympathetic activation (Levenson, 1992), rejection and avoidance (Rozin, Haidt, & McCauley, 1993), and perceived threats of being contaminated or infected (Izard, 1993). Several investigators have examined the function of these two emotions in the etiology and maintenance of small animal (Davey, 1993) and blood-injection-injury (BII) phobias (Kleinknecht, Thorndike, & Walls, 1996). While individuals with each type of specific phobia report fear when exposed to phobia-relevant stimuli (Tolin, Lohr, Sawchuk, & Lee, 1997), BII phobics tend to respond with a greater degree of disgust or aversion when exposed to blood than do spider phobics when exposed to spiders (Tolin, Sawchuk, & Lee, 1999).

In an attempt to examine subjectively reported fear and disgust to phobic-relevant stimuli, Tolin et al. (1997) exposed spider phobics, BII phobics, and nonphobics to colour photographs of spiders and injections. Participants completed an emotion rating scale designed to assess the subjective/emotional, motoric, physiological, and cognitive appraisal dimensions of fear and disgust for each picture. Analysis of the picture ratings indicated that both phobic groups reported high levels of fear and disgust when rating phobic-relevant stimuli relative to nonphobics. In order to determine whether the predominant response for each group was that of fear or disgust, composite fear and disgust scores were calculated for each participant. Analysis of the composite scores indicated that spider phobics reported equal levels of fear and disgust when viewing spiders, whereas BII phobics reported significantly higher levels of disgust than fear when viewing injections. The phobic participants were further classified as 'primarily fearful' or 'primarily disgusted' based upon directly comparing their composite fear and disgust ratings. Results indicated that 78% of the spider phobics were classified as primarily fearful, whereas 100% of the BII phobics were classified as primarily disgusted.

Questionnaires assessing disgust sensitivity (e.g. Disgust Scale (DS); Haidt, McCauley, & Rozin, 1994) have been found to be positively correlated with measures of small animal fears (Matchett & Davey, 1991; Tolin et al., 1997) and BII phobia (Sawchuk, Lohr, Tolin, Lee, & Kleinknecht, 2000a; Tolin et al., 1997). de Jong and Merckelbach (1998) demonstrated domain specificity among disgust elicitors for spider and BII phobics. Specifically, significant correlations emerged between measures of spider fear and animal-related disgust, and between measures of BII fear and disgust associated with bodily punctures and wounds, findings of which were largely replicated in analogue samples of spider and BII phobics (Sawchuk et al., 2000a). Studies also suggest that although spider phobics' stimulus-bound disgust reactions may decrease with treatment, their degree of disgust sensitivity, as assessed by the *Disgust Questionnaire* (DQ; Rozin, Fallon, & Mandell, 1984), remains relatively unchanged even after successful exposure treatment, thereby implying that disgust may serve a unique and independent role in the etiology and maintenance of spider phobia (de Jong, Andrea, & Muris, 1997).

Avoidance of stimuli based on perceived threat of contamination is a central theme among the range of potential disgust elicitors, including phobic stimuli. The disease-avoidance model of small animal phobias articulated the idea that fear-relevant, but nonpredatory, animals may be

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