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Fear, disgust, and information processing in specific phobia: The application of signal detection theory

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Abstract

A growing body of research suggests that individuals with small animal and blood-injection-injury (BII) phobias respond to phobia-relevant stimuli with a combination of fear and disgust. Despite the recognition that disgust may serve a functional role in phobic avoidance behavior, little is known about biased information processing for disgust-related material. Two studies examined recognition memory, using signal detection analyses, for phobia-relevant and general disgust pictures. Study 1 failed to find differences between spider phobics, BII phobics, and nonphobics in discrimination ability (d') and response bias (c) for spider, surgical, and two categories of general disgust pictures. Results indicated that all participants responded in a liberal manner toward surgical and disgust pictures, whereas they responded more conservatively when judging spider pictures. Study 2 also failed to find differences between BII phobics and nonphobics in discrimination ability and response bias for surgical and disgust pictures presented at 500 and 50 ms exposure durations. All participants again adopted a liberal response bias toward surgical and disgust pictures, although only under the 500 ms stimulus presentation condition. These results do not suggest the presence of preferential information processing of phobia-relevant or general disgust elicitors among phobic participants. The functional value of disgust-mediated information processing biases is questioned given the available literature. Implications and suggestions for continued

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information processing research for fearful and disgusting stimuli in specific phobia are outlined.

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1. Introduction

Examination of the unique emotional responses of fear and disgust toward threat-relevant stimuli has gained increased empirical attention in recent years (Sawchuk, Lohr, Tolin, Lee, & Kleinknecht, 2000; Woody & Teachman, 2000). Theoretical developments, such as the disease-avoidance model of small animal phobias (Matchett & Davey, 1991), have prompted studies proposing that disgust, either alone or in combination with fear, served a functional role in phobic avoidance behavior (Merckelbach, de Jong, Arntz, & Schouten, 1993). Investigations using self-report questionnaires assessing disgust and disgust sensitivity suggest that small animal and blood-injection-injury (BII) phobics are characterized by elevated disgust reactions toward phobia-relevant stimuli, relative to nonanxious controls (de Jong & Merckelbach, 1998; Mulkens, de Jong, & Merckelbach, 1996; Tolin, Lohr, Sawchuk, & Lee, 1997). Additional research has found that heightened aversion is not only domain-specific, but also generalizes to other domains (e.g., rotting foods, body products, hygiene) seemingly unrelated to phobic concerns (Sawchuk et al., 2000). The findings of questionnaire research have also been largely replicated in experimental studies in which spider phobics and BII phobics were exposed to pictures of phobia-relevant and general disgust pictures (Sawchuk, Lohr, Westendorf, Meunier, & Tolin, *in press*), and in studies in which phobics engaged in behavioral approach-avoidance tasks (de Jong, Vorage, & van den Hout, 2000; Mulkens et al., 1996; Smits, Telch, & Randall, *in press*).

Fear and disgust are discrete emotional states characterized by differential patterns of physiological reactivity, behavioral tendencies, and facial expressions (Ekman, 1992; Izard, 1977). However, both emotions tend to present in an interactive, aggregate manner upon exposure to phobic stimuli (Sawchuk et al., *in press*; Woody & Teachman, 2000). The relationships of fear, disgust, and specific phobia can be further examined through the systematic investigation of cognitive information processing biases of interpretation, attention, and memory. Theories regarding the nature, structure, function, and expression of emotions have been increasingly applied to the experimental psychopathology of anxiety disorders (Foa & Kozak, 1986; Mathews & MacLeod, 1994). Biases in the processing of threat-relevant information (i.e., interpretive, attentional, and memory functions) are presumably related to the maintenance of clinical anxiety (Mathews & Mackintosh, 1998). Various methods for measuring these biases have

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