

Experienced disgust causes a negative interpretation bias: A causal role for disgust in anxious psychopathology

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Received 19 July 2005; received in revised form 19 September 2005; accepted 6 October 2005

Abstract

This paper reports the results of an experiment investigating the effect of induced disgust on interpretational bias using the homophone spelling task. Four groups of participants experienced a disgust, anxiety, happy or neutral mood induction and then completed the homophone spelling task which requires the participant to interpret ambiguous words presented through headphones. Both the disgust and anxiety groups interpreted significantly more threat/neutral homophones as threat than both the happy and neutral groups; the disgust group also interpreted significantly fewer positive/neutral homophones as positive than the happy group. These findings are consistent with the view that induced disgust causes a negative interpretational bias which is similar to that reported for anxiety. The results could not be interpreted in terms of the disgust induction concurrently raising levels of self-reported anxiety, but could be interpreted in terms of disgust maintaining existing levels of anxiety. The effect of disgust was to facilitate negative interpretations rather than emotional interpretations regardless of valence. These findings provide the basis for a causal role for disgust in anxious psychopathology. Because the effect is a non-specific emotion-congruent one, elevated disgust levels will result in a predisposition to interpret information in a threatening way across a broad range of anxious- and threat-relevant domains. © 2005 Elsevier Ltd. All rights reserved.

Keywords: Disgust; Anxiety; Mood inductions; Information-processing bias; Threat interpretation; Anxious psychopathology

Introduction

Disgust is a universal negative emotion characterised by a distinctive facial expression and specific cognitive, physiological and behavioural components. It is viewed primarily as a food-rejection response that manifests as a fear of contamination, avoidance of disgusting objects, and physiological responses such as feelings of nausea (Davey, 1994b; Rozin & Fallon, 1987). Over the past 10–15 yr there has been a growing interest in the role of the disgust emotion in psychopathology, and particularly anxious psychopathology (e.g. Phillips, Senior, Fahy & David, 1998; Woody & Teachman, 2000). Disgust has been identified as an experienced feature of a number of specific phobias, including animal phobias generally (Davey, 1994a; Matchett & Davey, 1991), spider phobia specifically (Mulken, de Jong & Merckelbach, 1996), blood-injection-injury phobia

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(Page, 1994; Tolin, Lohr, Sawchuk, & Lee, 1997), the fear of contamination element of obsessive-compulsive disorder (OCD) (Charash & McKay, 2002; Muris et al., 2000), clinical and sub-clinical eating disorders (Davey, Buckland, Tantow & Dallos, 1998), and health anxiety (Davey & Bond, 2005).

Despite these encouraging findings there is at present no compelling or integrated theory of how disgust might be involved in anxious psychopathology. When the involvement of disgust has been hypothesised in anxious psychopathology, this has tended to be on the basis that the psychopathology contains features that involve some of the relevant characteristics of the disgust emotion. Examples include food rejection in eating disorders, fear of contamination in OCD sub-types such as compulsive washing, and fear of contamination, illness and disease in animal phobias. However, while there is substantial evidence that disgust is *experienced* in most of these ‘disgust-relevant’ psychopathologies and high disgust sensitivity levels may represent a risk factor, there is still no convincing evidence that disgust plays any kind of causal role in the development of any of these disorders (Davey, 2003).

There are at least two other factors that complicate our understanding of the role of disgust in anxious psychopathology.

First, measures of disgust are often found to be significantly correlated with measures of anxious psychopathologies that would not, a priori, be expected to be disgust relevant. These include situational–environmental phobias and separation anxiety (Muris, Merckelbach, Schmidt, & Tierny, 1999), agoraphobia (Muris et al., 2000), height phobia (Davey & Bond, 2005), and claustrophobia (Davey & Bond, 2005). Davey and Bond (2005) still found highly significant correlations between measures of disgust and measures of height phobia and claustrophobia even when anxiety scores were partialled out. This latter finding implies that these strong relationships between measures of disgust and seemingly ‘disgust-irrelevant’ psychopathologies are not merely artefacts of either the disgust measure being confounded with anxiety, or anxiety mediating the relationship between these variables.

Second, if disgust does play a causal role in the development of anxious psychopathologies, then we might expect to find that manipulations that induce disgust will result in increases in experienced anxiety. In a series of three studies using a range of different mood induction and mood measurement methods, Marzillier and Davey (2005) found that disgust and anxiety possessed a unidirectional relationship in which induced anxiety produced increases in reported disgust, but there was no evidence for an effect of induced disgust on reported anxiety (see also Alaoui–Ismaili, Robin, Rada, Dittmar, & Vernet-Maury, 1997; Gross & Levenson, 1995). At the very least, these findings suggest that if disgust does have a causal influence in some anxious psychopathologies, this influence is not mediated simply by experienced disgust facilitating experienced anxiety.

Bearing these issues in mind, the present experiment was designed to investigate whether disgust might influence the development of anxious psychopathologies in a less direct way by generating non-specific cognitive biases that might give rise to anxiety-relevant thinking. Disgust is a negatively valenced emotion and, like anxiety, may generate threat-relevant biases in attentional allocation, information processing and biases in the interpretation of ambiguous material (Mathews & MacLeod, 1994). In particular, previous research has indicated that there is a general tendency to find emotion-congruent effects in the interpretation of ambiguity. That is, if the individual is experiencing a negative emotion, they are likely to adopt the negative interpretation of an ambiguous stimulus configuration (Eysenck, MacLeod, & Mathews, 1987; Halberstadt, Niedenthal, & Kushner, 1995; Mathews, Richards, & Eysenck, 1989; Niedenthal, Halberstadt, & Setterlund, 1997; but see, Blanchette & Richards, 2003).

Given this background, the present study uses the homophone spelling task to investigate how induced disgust influences the interpretation of ambiguous material (see Blanchette & Richards, 2003; Halberstadt et al., 1995; Mathews et al., 1989; Russo, Patterson, Roberson, Stevenson, & Upward, 1996). This task presents ambiguous words spoken through headphones, and the participant is asked to write down (spell) the word they hear. Homophones can either be ambiguous threat/neutral (e.g. die/dye) or positive neutral (e.g. peace/piece). If disgust has an emotion-congruent effect on the interpretation of ambiguous homophones, we would expect induced disgust to result in more threat spellings of the threat/neutral homophones and fewer positive spellings of the positive/neutral homophones than participants experiencing control mood inductions (e.g. neutral or happy mood inductions). The study is also designed to compare the effects of specific disgust and anxiety inductions on the interpretation of ambiguity. Anxiety is known to be associated with biases

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