



THE EFFECTS OF MOOD MANIPULATION AND TRAIT ANXIETY ON SUSCEPTIBILITY TO DISTRACTION

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Summary—Eysenck (1992) argues that high trait-anxious subjects are more likely to show a general susceptibility to distraction in anxious mood states, especially if the distracting material resembles the task stimuli. Unfortunately there is little direct evidence that supports this view. The present experiment therefore attempted to test Eysenck's proposition by modifying a test of distractibility for letters on a letter-transformation task, as originally devised by Eysenck and Graydon (1989), to incorporate a mood manipulation. Although high trait-anxious subjects were found to be generally more impaired than controls by the mood manipulation, they did not display greater susceptibility to distraction from task-similar material. These results are discussed in relation to current theoretical models of anxiety and cognitive processing.
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INTRODUCTION

Research investigating the effects of emotion on information processing capabilities has found a relationship between levels of anxiety and preferential attentional processing of threat-related material (see Beck & Emery, 1985; Wells & Matthews, 1994; Williams, Watts, MacLeod & Mathews, 1988). With reference to an anxiety-related susceptibility in attention, Eysenck (1992) has proposed a theory of hypervigilance. He argues that the reason why high trait-anxious subjects display biases in attention is because they have hypervigilant attentional processing systems. By hypervigilance, Eysenck means that attentional processes in anxious Ss are more likely to scan the environment and pick up any salient (i.e. threat-related, task-relevant) material. Furthermore, he proposes that such hypervigilance is mediated by levels of state anxiety; high trait-anxious Ss are most likely to exhibit hypervigilance when they are also high in state anxiety.

From this theory, Eysenck (1992) has argued that "this hypervigilance may manifest itself in a variety of different ways: general hypervigilance, which is demonstrated by a propensity to attend to any task-irrelevant stimuli which are presented; this is generally known as distractibility; . . . [and] specific hypervigilance, which is demonstrated by a propensity to attend selectively to threat-related rather than neutral stimuli" (p. 43). But is there any evidence to suggest that specific and general mechanisms exist, and whether they in turn are mediated by levels of state anxiety?

A specific threat-related susceptibility to distraction has been found in both clinical (e.g. Mathews, May, Mogg & Eysenck, 1990) and non-clinical high-trait anxious subjects (e.g. Eysenck & Byrne, 1992). Mathews *et al.* (1990) found that both clinically anxious and recovered clinically anxious patients showed a greater threat-related susceptibility to distraction than non-clinical controls. Furthermore, when using a similar method to that used by Mathews *et al.* (1990), Eysenck and Byrne (1992) found that non-clinical high trait-anxious Ss showed a specific physical threat-related, but not social threat-related, susceptibility to distraction. More recently, Keogh and French (1994) reported finding evidence that a mood manipulation appeared to increase vulnerability towards threat-related material. However, this susceptibility only became apparent if Ss were classified on a specific trait measure (i.e. test anxiety), which was congruent with their mood states, rather than on a general tendency to anxiety (i.e. trait anxiety). While these results support Eysenck's (1992) proposition that a threat-related vulnerability is latent and becomes most apparent in times of stress,

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they also suggest that the specific nature of both the mood manipulation and trait predisposition should be taken into consideration.

One of the main methods that has been used to determine whether anxiety is associated with a general susceptibility to distraction is to present subjects with task-irrelevant material whilst performing a central task. The degree to which performance is impaired by task-irrelevant material is taken as an index of distractibility. It should be noted, however, that a number of factors are likely to influence a susceptibility to distraction. For example, Graydon and Eysenck (1989) not only found that the complexity of the central task was important, but that the degree of similarity between the central task and the distractor stimuli played a role in determining a susceptibility to distraction. Specifically, if a task is simple then the similarity between the central task and the distracting stimuli does not seem to be important. However, if a more complicated task is being performed then the similarity between distractor and central task characteristics seems to increase susceptibility to distraction.

There is some, though limited, evidence that a general anxiety-related susceptibility to distraction exists. Dornic and Fernaeus (1981), for example, investigated differences between stable extraverts and neurotic introverts on a susceptibility to distraction. Performance was assessed by using a modified version of Hamilton, Hockey and Rejman's (1977) letter transformation task. During this task, Ss were presented with 1, 2, 3 or 4 letters and were required to transform the letters through a specified distance in the alphabet. If, for example Ss were presented with the letter series AFN + 2 then the answer would be 'CHP'. While performing this letter transformation task Ss were concurrently presented with verbal distractors. Dornic and Fernaeus (1981) found that when compared to stable extraverts, neurotic introverts exhibited a greater susceptibility to distraction. Since these dimensions on the EPI correlate highly with low and high trait anxiety, then this suggests the existence of a general anxiety-related susceptibility to distraction.

Eysenck and Graydon (1989) have also investigated a susceptibility to distraction using the letter-transformation task. The complexity of the letter transformation task was investigated, by varying the distance in the alphabet (+ 2 vs + 4). In addition, the similarity between the central task and distractor stimuli was explored by presenting Ss with three types of auditory distractor: spoken letters mixed with white noise, meaningless blips mixed with white noise, or white noise alone (i.e. the control condition). Eysenck and Graydon argued that Ss would be more distracted by the spoken letters since they were the most similar to the task stimuli. Finally, the intensity of the white noise was also varied. Some Ss received low white noise levels, some received medium white noise levels, whilst others received high white noise levels. Eysenck and Graydon (1989) proposed that an increase in noise intensity would increase Ss' arousal levels (i.e. state anxiety), which in turn would be associated with changes in their attentional processes (for reviews of the effects of arousal level and attention, see Dornic, 1977; Easterbrook, 1959; Hockey, 1970; Humphreys & Revelle, 1984).

Eysenck and Graydon (1989) not only found that there was a highly significant effect of problem complexity (with the more complex tasks taking longer), but that the letter distractors were the most distracting during the high complexity task. However, the effect of noise intensity was not significant. Eysenck and Graydon suggest that the state arousal changes probably did not have an effect because of the lack of relevance to the task. In other words, the state arousal manipulation may not have influenced Ss' ability to avoid general distraction because the state arousal was not relevant to Ss.

In addition to the effects of state arousal, Eysenck and Graydon (1989) also investigated the role of stable personality characteristics on ability to avoid distraction. Ss were classified on the Eysenck Personality Inventory (EPI; Eysenck & Eysenck, 1964) as being either stable extraverts or neurotic introverts. These personality dimensions were used in a separate analysis to investigate their influence on performance and distraction. A significant interaction between personality and distraction was found. Neurotic introverts were reported to perform more slowly in the letter-distraction condition than stable extraverts. Eysenck and Graydon argued that those more susceptible to anxiety (i.e. neurotic introverts) may be more likely to be distracted by material that is similar to that involved in the central task than those less susceptible to anxiety (i.e. stable extraverts).

While the Eysenck and Graydon (1989) study provides an interesting account of the separate influence of state arousal and predisposition to anxiety, they did not analyse these factors together. Indeed, the mediating role of state anxiety with levels of trait anxiety has not yet been adequately

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