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## Hypervigilance–avoidance pattern in spider phobia

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### Abstract

Cognitive-motivational theories of phobias propose that patients' behavior is characterized by a hypervigilance–avoidance pattern. This implies that phobics initially direct their attention towards fear-relevant stimuli, followed by avoidance that is thought to prevent objective evaluation and habituation. However, previous experiments with highly anxious individuals confirmed initial hypervigilance and yet failed to show subsequent avoidance. In the present study, we administered a visual task in spider phobics and controls, requiring participants to search for spiders. Analyzing eye movements during visual exploration allowed the examination of spatial as well as temporal aspects of phobic behavior. Confirming the hypervigilance–avoidance hypothesis as a whole, our results showed that, relative to controls, phobics detected spiders faster, fixated closer to spiders during the initial search phase and fixated further from spiders subsequently.

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## 1. Introduction

Fear is an aversive emotional state that serves a protective purpose. It signals danger and prepares us to deal with it. However, for people with specific phobias, fear is pathological and thus interferes with a person's ability to cope with everyday situations. In this case, fear is related to the presence or anticipation of a particular object or situation, and patients are usually aware of how unreasonable their fear is (American Psychiatric Association, 2000). Phobic behavior typically includes avoidance, which is supposed to have two main functions. On the one hand, avoidance enables patients to reduce anxious mood states by keeping encounters with fear-relevant stimuli to a minimum (Thorpe & Salkovskis, 1999). On the other hand, the same behavior is regarded as a major factor in maintaining phobia, since avoidance prevents habituation to, or objective evaluation of, fear-related stimuli (Mogg, Bradley, De Bono, & Painter, 1997).

Numerous studies have shown that there is an attentional bias in processing fear-related information and that this bias is particularly pronounced in phobics (see Mogg & Bradley, 1998 for a review). For example, Ohman, Flykt, and Lundqvist (2000) provided evidence that healthy subjects detect fear-relevant stimuli such as snakes or spiders faster than fear-irrelevant ones. This 'snake-in-the-grass effect' is enhanced in phobics, depending on the nature of their disorder (e.g., spider phobics were faster in detecting spiders as opposed to snakes). The authors attributed their findings to preattentive processes that are triggered by biologically prepared aversive stimuli. Once a threat stimulus is detected, attention automatically shifts to its location. In phobics, the aversive emotion is thought to accelerate detection. A recent study reported that, compared to control subjects, spider phobics more often perceived their responses to spiders as automatic, i.e., not under intentional control (Mayer, Merckelbach, & Muris, 2000). This finding highlights the preattentive and automatic nature of the mechanisms that direct the attention of phobics towards fear-relevant stimuli.

Fast detection abilities of phobics have commonly been attributed to the more general concept of hypervigilance, which describes the tendency to constantly scan the environment for any signs of threat (Thorpe & Salkovskis, 1999). The prefix *hyper* indicates that, although most people are vigilant for potential threat, this vigilance is strongly enhanced in phobics. As fast identification of threat allows early activation of defenses (Ohman et al., 2000), hypervigilance may serve a protective purpose. However, it is regarded as an important factor in the acquisition of pathological fear as well (Williams, Watts, MacLeod, & Mathews, 1997). Individuals who are permanently scanning the environment for threat may be more likely to perceive the world as a dangerous place, which in turn enhances their anxious mood and might increase the probability that they develop pathological anxiety (Mogg & Bradley, 1998).

So far, two aspects of phobic behavior with regard to fear-relevant stimuli have been described: avoidance and hypervigilance. It has been assumed that everyday routines of phobics are influenced by both tendencies (e.g., Lang, Bradley, &

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