

# Attentional bias for body and food in eating disorders: Increased distraction, speeded detection, or both?

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## Abstract

Previous research suggests that eating disorder patients show an attentional bias for body- and food-related information. However, so far little is known about the mechanisms that underlie the attentional favoring of this particular information in eating disorder patients. In the present study, we used both a body and a food visual search task to study speeded detection and increased distraction in eating disorder patients ( $n = 67$ ) and healthy controls ( $n = 60$ ). Compared with controls, eating disorder patients showed evidence of speeded detection of body-related information, and increased distraction by food information. These results suggest that the mechanism underlying the biased attentional allocation of eating disorder patients varies, and is dependent upon the type of information they are presented with.

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## Introduction

It has been only two decades since researchers have begun to acknowledge the relevance of cognitive biases in the etiology and maintenance of eating disorders (EDs) (for reviews see [Faunce, 2002](#); [Lee & Shafran, 2004](#); [Williamson, White, York-Crowe, & Stewart, 2004](#)). Cognitive models point out that eating pathology arises from maladaptive knowledge structures (e.g., schemas) that are involved in the allocation of attention, in memory and in the interpretation of incoming information ([Hargreaves & Tiggemann, 2002](#); [Williamson et al., 2004](#)). Activation of these knowledge structures causes disorder-relevant information to be processed in a biased manner, resulting in a range of cognitive biases in attention, judgment and memory ([Williamson et al., 2004](#)). The focus of the current study is on one of these biases: the exact nature of the attentional bias in EDs.

An attentional bias refers to the tendency to selectively attend to disorder-relevant stimuli (e.g., [Mathews & MacLeod, 2005](#); [Williamson et al., 2004](#)). According to cognitive models, individuals suffering from EDs are more likely to give priority to cues pertaining to body and food-related information than to neutral cues, in comparison

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to healthy people. Indeed, the great majority of studies employing the emotional Stroop paradigm (e.g., Williams, Mathews, & MacLeod, 1996) found that ED patients show increased interference when naming the color of disorder-relevant word stimuli as compared with neutral stimuli (for reviews see: Dobson & Dozois, 2004; Lee & Shafran, 2004). Although these interference effects have generally been interpreted as direct evidence for an attentional bias, alternative explanations have been put forward (Jansen, Nederkoorn, & Mulken, 2005; Lee & Shafran, 2004; Macleod, 2005). For example, De Ruiter and Brosschot (1994) have argued that attempts to cognitively avoid the processing of disorder-relevant word stimuli might also result in increased interference scores. Given this uncertainty about the meaning of increased interference scores, no firm conclusions can be drawn about the existence of an attentional bias in ED patients on the basis of results in the emotional Stroop paradigm.

A better alternative for studying attentional biases is the dot-probe paradigm (Macleod, Mathews, & Tata, 1986), because it allows for the differentiation between attention directed towards or away from a particular type of information. To date, two studies have investigated attentional processes in ED patients using the dot-probe paradigm. Rieger et al. (1998) demonstrated that ED patients showed a tendency to direct their attention towards words denoting a large physique and away from words denoting a thin physique. More recently, using a pictorial version of the dot-probe paradigm, Shafran, Lee, Cooper, Palmer, and Fairburn (2007) found robust attentional bias effects for eating and weight-related stimuli in ED patients in comparison to controls, but less consistent effects for shape-related stimuli.

Although it is possible to use the dot-probe paradigm to distinguish engagement and disengagement subcomponents of attention, either by manipulating the presentation duration (Mogg, Bradley, Miles, & Dixon, 2004) or by including neutral trials (Koster, Crombez, Verschuere, & De Houwer, 2004; Salemink, van den Hout, & Kindt, 2007), the dot-probe paradigm has not been used in this way in EDs research. It thus remains an unresolved issue as to how the attentional bias in ED patients can be understood in terms of facilitated attention to or slowed withdrawal from the disorder-relevant information.

Though possibly reflecting a somewhat different distinction, in this study we use a paradigm that is able to distinguish two subcomponents of attention: speeded detection (i.e., increased orienting towards relevant stimuli) and distraction (i.e., increased distraction by relevant stimuli). Like Rinck, Reinecke, Ellwart, Heuer, and Becker (2005) we use the odd-one-out variant of the visual search paradigm (Hansen & Hansen, 1988). Rinck et al. (2005) studied the nature of attentional bias in spider-fearful individuals. Participants were presented with matrices of 20 pictures and they were instructed to indicate whether the matrix consisted of 20 animal pictures of the same category or whether it included one animal picture from a different category. Results indicated that both speeded detection of threatening target pictures (i.e., faster detection of a spider picture among 19 neutral pictures than a neutral picture among 19 neutral pictures from another category) and increased distraction by threatening distractors (i.e., slower detection of a neutral image among 19 spider pictures than a neutral image among 19 neutral images from another category) were involved in the attentional processing of spider-fearful participants.

To sum up, given both the controversy concerning the interpretation of increased interference scores in the emotional Stroop research and the lack of knowledge about which mechanism underlies an attentional bias in EDs, it is of interest to investigate more precisely the attentional bias for body and food stimuli in ED patients. Inspired by the visual search methodology as adopted by Rinck et al. (2005), we designed a body- and a food-related version of the odd-one-out visual search task to study both speeded detection and increased distraction. Speeded detection of disorder-relevant concepts (i.e., body- or food-related words) is studied by comparing response latencies to detect a disorder-relevant target word vs. a neutral target word among neutral distractor words from another category. Increased distraction is studied by comparing response latencies to detect a neutral target word among disorder-relevant vs. neutral distractor words from another category. It is hypothesized that ED patients show evidence of speeded detection of and increased distraction by body- and food-related information, in comparison to controls.

## Method

### *Participants*

A total of 128 participants took part in the experiment. Sixty-eight female ED patients were recruited at the national Centre for Eating Disorders Ursula in Leidschendam, the Netherlands. At the time of intake, all

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