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Time course of attentional biases toward body shapes: The impact of body dissatisfaction

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ABSTRACT

Using a dot-probe discrimination task and a between-subjects design, we examined the time course of attentional biases (facilitated attention, delayed disengagement, and avoidance) toward thin versus fat bodies and explored the influence of body dissatisfaction (BD) on attention allocation among a sample of 163 women from the general population. Three stimulus presentation times were used: 100 ms, 500 ms, and 1500 ms. We also used neutral body-shape-related stimuli as neutral stimuli related to the concept of interest to overcome the limitations of previous studies. At 500 ms, the results highlighted delayed disengagement from very thin and negatively assessed bodies among women with high BD. This mechanism, which leads to attentional focalization on bodies that are difficult to achieve, might be considered dysfunctional because it may maintain or reinforce BD. Results at 100 ms and 1500 ms, as well as results for fat bodies, were not conclusive.

Introduction

Body dissatisfaction (BD) is characterized by a discrepancy between the perception a woman has of her body and the ideal body she wants to have, leading to a negative subjective evaluation of her body (Furnham & Greaves, 1994; Stice & Shaw, 2002). It is a phenomenon of paramount importance in Western societies, given its high prevalence among women (11–72%; Fiske, Fallon, Blissmer, & Redding, 2014) and its potential negative consequences (e.g., eating problems, low self-esteem, sexual difficulties; O'Dea, 2012; Stice & Shaw, 2002; Wiederman, 2012). Thus, an examination of the processes that potentially influence BD is essential. Several studies (for a review, see Rodgers & DuBois, 2016) investigated the role of attention allocation in BD, exploring which type of body shapes (thin or fat; e.g., Gao et al., 2011; Purvis, Jones, Bailey, Bailenson, & Taylor, 2015) or which specific body parts (attractive or unattractive; Jansen, Nederkoorn, & Mulkens, 2005) women with high BD (HBD women) look at. Indeed, selective attentional biases (ABs) might cause BD: The induction of an AB toward body-shape-related stimuli (Smith & Rieger, 2006) or own unattractive body parts (Smeets, Jansen, & Roefs, 2011) was shown to increase BD. Accordingly, detailed knowledge of women's selective ABs is necessary because some women might engage in attentional patterns that maintain their BD.

A selective AB is defined as the preferential allocation of attentional resources toward one stimulus type (usually emotional stimuli) relative to other stimuli (usually neutral stimuli; Pourtois, Schettino, & Vuilleumier, 2013; Vuilleumier, 2005). As a consequence, stimuli in the attentional focus are processed more efficiently (Posner & Presti, 1987). It has been theorized that the preferential processing of emotional stimuli depends on the stimuli's relevance for the goals and values of the individual rather than their valence (Sander, Grandjean, & Scherer, 2005): Both negative and positive emotional stimuli can capture the attentional focus (e.g., Brosch, Sander, Pourtois, & Scherer, 2008). According to this view, in the field of body image, all emotional body-shape-related stimuli (i.e., thin and fat bodies) could be considered relevant and should be given priority over other stimuli that are competing for attentional resources.

ABs are frequently assessed with a dot-probe paradigm, originally developed by MacLeod, Mathews, and Tata (1986). In this task, a pair of stimuli (i.e., an emotional and a neutral stimulus) are briefly presented on the screen, followed by a probe (i.e., the target

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object – such as an arrow pointing either up or down – to which the participant will have to respond) that replaces one of the stimuli. A trial is defined as congruent when the probe replaces the emotional stimulus and incongruent when it replaces the neutral stimulus. The participant has to indicate a characteristic of the probe (e.g., the direction of the arrow) as quickly as possible. Reaction time (RT) is faster if the participant's attentional focus is already fixated on the area where the probe appears.

The dot-probe task presents the advantage of assessing three types of ABs, which appear at different stages of attentional processing: facilitated attention, delayed disengagement, and avoidance (Cisler & Koster, 2010). Facilitated attention is defined as the capture of attentional focus by an emotional stimulus to the detriment of other stimuli (e.g., neutral stimuli) that are competing for attentional resources; in the dot-probe task, this phenomenon leads to faster RTs in congruent trials than in incongruent trials. To observe this, researchers use very brief stimulus presentation times (e.g., 100 ms or less), given that, with longer durations, participants are able to voluntarily shift their attentional focus to other stimuli (e.g., Rayner, 1998). Delayed disengagement corresponds to the time needed, after the capture of attentional focus by the emotional stimulus, to move the focus toward another stimulus (e.g., neutral stimulus). Initial emotional capture thus induces delayed attentional switching, leading – like facilitated attention – to slower RTs in incongruent trials than in congruent trials. To observe this, researchers use presentation times of 500 ms and longer (e.g., Gao et al., 2011; Koster, Crombez, Verschuere, & De Houwer, 2004). Although facilitated attention and delayed disengagement have similar effects on the comparison between congruent and incongruent trials, they can be dissociated when neutral trials (i.e., trials that contain two neutral stimuli) are taken into account: Facilitated attention leads to faster RTs in congruent trials than in neutral trials, whereas delayed disengagement leads to slower RTs in incongruent trials than in neutral trials (Koster et al., 2004). Finally, attentional avoidance is defined as the allocation of attentional focus away from the emotional stimulus, leading to slower RTs in congruent trials than in incongruent and neutral trials, and usually occurring when the emotional stimulus is threatening. This can appear at 500 ms (e.g., Koster, Crombez, Verschuere, Van Damme, & Wiersema, 2006), but most researchers have used longer presentation times (e.g., 1500 ms; Cisler & Koster, 2010; Mogg, Bradley, Miles, & Dixon, 2004). In sum, to distinguish between the three types of ABs, the dot-probe task allows researchers (a) to manipulate the presentation times of stimuli (e.g., by using durations of 100 ms or less to observe facilitated attention and longer durations to observe delayed disengagement or avoidance; Cisler & Koster, 2010; Koster et al., 2006; Mogg et al., 2004) and (b) to include baseline neutral trials to compare them to both congruent and incongruent trials in order to disentangle the different ABs (Koster et al., 2004).

In the field of body image, past studies that examined selective ABs toward body shape/weight-related stimuli using a dot-probe task obtained inconsistent results. Rieger et al. (1998) observed that, at 500 ms, patients with eating disorders (EDs) had slower RTs in congruent trials with thinness-related words (pattern consistent with avoidance) and a tendency to present faster RTs in congruent trials with fatness-related words (pattern consistent with delayed disengagement). Gao et al. (2011) obtained similar results by combining the dot-probe task with an eye-tracking assessment: HBD women presented initial orienting, faster detection, and initial maintenance (i.e., longer first fixation) toward fatness-related words (pattern consistent with facilitated attention followed by delayed disengagement) versus faster detection (pattern consistent with facilitated attention) and avoidance of thinness-related words. At a presentation time of 1000 ms, Shafran, Lee, Cooper, Palmer, and Fairburn (2007) also found a pattern consistent with delayed disengagement from fatness-related items: Patients with ED presented faster RTs in congruent trials with fatness-related pictures. Nevertheless, Glauert, Rhodes, Fink, and Grammer (2010) obtained divergent results: Women from the general population presented faster RTs when probes replaced thin computer-generated bodies at 150 ms (pattern consistent with facilitated attention) and at 500 ms (pattern consistent with delayed disengagement). Finally, Boon, Vogelzang, and Jansen (2000) observed no effect of body-shape-related words on attention. In sum, these results are inconsistent at two levels. First, they do not highlight whether women allocate their attention toward (facilitated attention or delayed disengagement) or away from (avoidance) body-shape-related stimuli. Second, it is not clear which women present ABs: Although the majority of studies reported ABs among HBD women (for a review, see Rodgers & DuBois, 2016) or women with high levels of appearance-related concerns such as ED patients (for a review, see Aspen, Darcy, & Lock, 2012), Glauert et al. (2010) denoted the presence of ABs independently of women's BD.

These divergent results might be explained by some limitations of the methodologies used. First, to examine ABs, words as stimuli have less ecological validity than visual stimuli such as pictures and computer-generated bodies. Second, none of these studies used neutral body-shape-related stimuli. For example, Rieger et al. (1998) used words related to household objects and Shafran et al. (2007) used pictures of animals. Therefore, the possibility of differential attentional processing of relevant (body-shape-related) and irrelevant (neutral) stimuli cannot be excluded, which could have led to a substantial artifact (i.e., an increase in the difference between emotional and neutral trials). Third, concerning Glauert et al.'s (2010) study, the main limitation of their methodology is the total absence of neutral stimuli. In their dot-probe task, pairs of stimuli consisted of thin and fat bodies, leading to a situation of "competition for attentional resources" given that two emotionally relevant stimuli were presented on the screen. Therefore, their results could have two explanations: (a) facilitated attention—delayed disengagement from thin bodies, as the authors suggested; or (b) avoidance of fat bodies. Moreover, their methodology did not allow them to examine whether both stimuli (thin vs. fat bodies) would have led to an AB if they had been presented separately. Finally, none of the past studies compared congruent/incongruent trials to neutral trials to disentangle the different biases and confirm the direction of a specific bias observed.

Overview of the Present Study

This study had two objectives: (a) to examine the existence of the three types of selective ABs (i.e., facilitated attention, delayed disengagement, avoidance) toward body-shape-related stimuli among a sample of women from the general population and (b) to explore the impact of BD on these ABs. We propose three hypotheses:

Hypothesis 1. Thin and fat bodies are emotional stimuli and therefore will trigger selective ABs. These biases may differ depending on the manipulation performed on the stimulus (e.g., delayed disengagement from thin bodies and avoidance of fat bodies).

Hypothesis 2. ABs present a specific time course. Because thin and fat bodies are emotional stimuli, at 100 ms, they will both trigger facilitated attention (preferential processing of emotional stimuli; Vuilleumier, 2005). At 500 ms and 1500 ms, biases may differ depending on the manipulation performed.

Hypothesis 3. ABs will vary depending on the participant's level of BD because thin and fat bodies are more relevant (and therefore emotionally charged; Sander et al., 2005) for dissatisfied women