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An attentional bias for thin bodies and its relation to body dissatisfaction

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ABSTRACT

Research suggests that humans have an attentional bias for the rapid detection of emotionally valenced stimuli, and that such a bias might be shaped by clinical psychological states. The current research extends this work to examine the relation between body dissatisfaction and an attentional bias for thin/idealized body shapes. Across two experiments, undergraduates completed a gender-consistent body dissatisfaction measure, and a dot-probe paradigm to measure attentional biases for thin versus heavy bodies. Results indicated that men ($n = 21$) and women ($n = 18$) show an attentional bias for bodies that correspond to their own gender (Experiment 1), and that high body dissatisfaction among men ($n = 69$) and women ($n = 89$) predicts an attentional bias for thin same-gender bodies after controlling for body mass index (BMI) (Experiment 2). This research provides a new direction for studying the attentional and cognitive underpinnings of the relation between body dissatisfaction and eating disorders.

Researchers have been interested in examining attentional biases for various emotionally valenced stimuli for decades (LoBue & Rakison, 2013). To date, most of this work has focused on studying attentional biases—defined as increased gaze duration or more rapid response times—for negative or threat-relevant stimuli such as angry faces, snakes, and spiders in human adults and children. Generally this work utilizes controlled visual search or dot-probe paradigms in which participants are asked to detect a target among various distracters, or to indicate the location or direction of a probe after it replaces one of two previously presented images. Using these paradigms and others, research has consistently shown that both adult and child participants detect threatening stimuli more quickly than non-threatening stimuli (see LoBue & Rakison, 2013; for a review).

Although developing individuals typically demonstrate a normative bias for threat in these standard visual attention tasks, studies with clinical populations have documented a strong relationship between attentional biases for specific threats and the onset of anxiety. For example, socially anxious adults detect angry faces even more quickly than their non-anxious counterparts (see Bar-Haim, Lamy, Pergamin, Bakermans-Kranenburg, & Van Ijzendoorn, 2007; for a meta-analysis), and phobic individuals detect the object of their phobias faster than non-phobic individuals (Öhman, Flykt, & Esteves, 2001). Importantly, several studies have shown that heightened attentional biases for social threats *precede* the onset of social anxiety (e.g., LoBue and Pérez-Edgar, 2014; Pérez-Edgar et al., 2011), leading some theorists to implicate attentional biases for threat in the development (Hakamata et al., 2010; LoBue, 2013) and maintenance (e.g., Mogg & Bradley, 1998) of anxiety disorders.

Recent research has demonstrated that visual biases for particular stimuli are not unique to angry faces, snakes, and spiders. A handful of researchers have begun to examine whether women demonstrate selective attention to *thin* or *idealized body stimuli* (Cho & Lee, 2013; Glauert, Rhodes, Byrne, Fink, & Grammer, 2010). Using a classic dot-probe paradigm, Glauert et al. (2010) presented women with images of a thin and an overweight body simultaneously positioned one above the other for a short period of time, and then replaced the location of one of the two images with an arrow probe. Participants were asked to report the direction in which the arrow probe pointed. Faster responding to probes that replaced one type of stimulus over the other is typically interpreted as an attentional bias (via rapid or sustained looking) for that stimulus. Glauert et al. (2010) found that women responded faster to probes that replaced thin versus heavy bodies, thus suggesting a normative attentional bias for thinness in women.

Like the relationship between attentional biases for social threats and social anxiety, Smith and Rieger (2006) suggested that attentional biases for thin body stimuli should be positively related to *body dissatisfaction*. Body dissatisfaction is the negative

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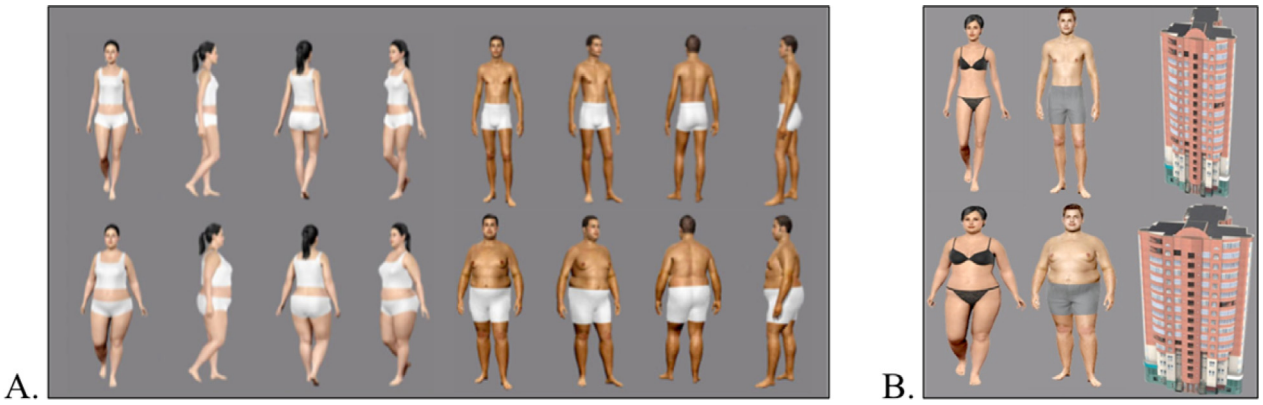

Fig. 1. A. Male and female body stimuli used in Experiment 1. B. Male and female body and object stimuli used in Experiment 2.

self-evaluation of one's physical size, shape, weight, and musculature, and is a well-established predictor of several significant health risks including obesity, depression, eating disorders, and anabolic steroid abuse (Stice & Shaw, 2002). To test their hypothesis experimentally, Smith and Rieger (2006) induced attentional biases towards negative body shape/weight related words (e.g., enormous, huge, blubber), neutral words (e.g., bottle, radio, glove), and negatively valenced emotion words (e.g., awful, desperate, humiliated) using a similar dot-probe task. Women who were induced to attend to negative body shape/weight related words reported higher levels of body dissatisfaction, while women in the other two conditions (neutral & negative emotion words) did not. This work opened the door to the systematic investigation of whether attentional biases for thin/idealized bodies are related to body dissatisfaction.

The current research examines the perceptual mechanisms, specifically attentional biases, that presumably foster and create body dissatisfaction in both men and women. The first goal was to replicate the findings of Glauert et al. (2010) demonstrating an attentional bias—which we define as faster reaction time to an arrow probe—to thin bodies in women, and further, to extend these findings to men. A second and related goal was to ask whether an attentional bias for thin body shapes is related to self-reported levels of body dissatisfaction in both genders. Although body dissatisfaction is most prevalent in women, men also experience significantly high levels of body dissatisfaction (Olivardia, Pope, Borowiecki, & Cohane, 2004; Pope, Phillips, & Olivardia, 2000; Ridgeway & Tylka, 2005). This raises the question of whether men also exhibit a relation between attentional bias for thin body shapes and body dissatisfaction.

Based on findings by Smith and Rieger (2006), we expected to find that attentional biases for thinness in both men and women are related to body dissatisfaction, with no significant differences based on gender. In other words, individuals who report very high levels of body dissatisfaction and are thus at risk for the development of eating disorders should show a particularly strong attentional bias for thin same-gender bodies. Just as anxious individuals demonstrate a particularly strong bias for threatening faces, we predict that individuals high in body dissatisfaction will show a particularly strong bias for thin same-gender bodies.

Experiment 1

We conducted an initial examination in which new body stimuli were created to determine whether the effects observed in previous work are exclusive to bodies that correspond to the gender of the perceiver. We used a dot-probe methodology identical to that of Glauert et al. (2010) with two exceptions. First, Glauert et al. (2010) used female body stimuli that were nude and emaciated, which are not typically observed in everyday environments. The stimuli in the current study were created to be more consistent with what one typically sees in the real world. Second, we included both male and female body stimuli. This modification allowed us to examine attentional biases for thin bodies in men, and to determine whether attentional biases are specific to the perception of same-gender bodies or whether they generalize to all human bodies.

Method

Participants. Participants were undergraduate students from Rutgers University Newark. Twenty-one male, mean age 19.8 (SD = 2.2) and 18 female, mean age 20.7 (SD = 2.2), participated for course credit. The study was approved by Rutgers University IRB. All participants provided written informed consent before initiating the study.

Stimuli. The images of the male and female bodies were constructed using visualization software found online at www.myvirtual-model.com (see Fig. 1A). We used this software to create realistic, full-body figures of a Caucasian man and a Caucasian woman with different BMIs. Body height (8.5 cm/10.4° of visual angle) corresponded to a human body height of 170.2 cm (5 ft, 7 in.), which is between the average height of an American male (175.3 cm; 5 ft, 9 in.) and the average height of an American female (162.6 cm; 5 ft, 4 in.). According to the Centers for Disease Control and Prevention (2000), the average BMIs of adult American men and women are 26.6 and 26.5, respectively, and the BMI range for normal weights in adults is 18.5–24.9. For the thin body stimuli, we used a BMI of 18, just below the healthy weight range (but not emaciated). To create the heavy body stimuli, we used a BMI of 42 for men and 36 for women, values that fall in the obese range (BMIs > 29.9).

For each body type, body postures were presented in four different viewing angles: frontal (0°), left (90°), back (180°), and right (270°) poses. The figures were clothed in "default underwear" as set by the online program. The male default consisted of gray shorts and no shirt, and the female default consisted of white shorts and a fitted white tank top.

Stimulus verification. To ensure that participants readily distinguished between the thin and heavy body stimuli, a separate sample of 19 naïve adult participants viewed and rated the 16 different body images (2 genders × 4 viewpoints × 2 BMIs) in a random order, each presented on a separate page. A printout of the male and female stimulus pairs was handed to each participant with the following instructions: "Rate these bodies from 1 (Skinny)