



## Explicit memory bias for positively valenced body-related cues in women with binge eating disorder

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### ABSTRACT

Overweight women with and without binge eating disorder (BED) are characterized by a marked body dissatisfaction, which may in part be due to the negative comments about their weight. Weight-related teasing and discrimination is reported both by healthy overweight women and women with BED, whereas body dissatisfaction is markedly increased among women with BED. Therefore, a memory bias for negatively valenced body-related cues is suspected to occur as a mediating factor in women with BED. In an experimental study, 18 women with BED were compared to 18 overweight healthy female controls (HC) on a free recall task containing four word categories: positively valenced with and without body-related content and negatively valenced with and without body-related content. While both groups showed a bias towards negatively valenced shape-/weight-related words, women with BED retrieved positively valenced shape-/weight-related words significantly less often compared to overweight HC. Findings suggest that it may be the reduced ability to attend to positively valenced shape-/weight-related information, rather than the activation of negative body schemata that differentiates overweight women with BED from overweight women without BED. Results are discussed in the context of cognitive biases in the maintenance of body dissatisfaction.

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### 1. Introduction

The overevaluation of shape and weight and corresponding concerns are core features that characterize both overweight women (Cash, 1995; Eisenberg, Neumark-Sztainer, & Story, 2003; Gleason, Alexander, & Somers, 2000; Grilo, Wilfley, Brownell, & Rodin, 1994) and women with binge eating disorder (BED; Eldredge & Agras, 1996; Hay & Fairburn, 1998; Hilbert & Tuschen-Caffier, 2005; Spitzer et al., 1993; Striegel-Moore, Wilson, Wilfley, Elder, & Brownell, 1998; Telch & Stice, 1998; Wilfley, Schwartz, Spurrell, & Fairburn, 2000; Wilson, Nonas, & Rosenblum, 1993), of whom mostly are overweight and obese (e.g., Cachelin et al., 1999; Striegel-Moore & Franko, 2003). Given the evidence of a systematic discrimination including weight-related teasing of overweight and obese individuals with and without BED (Brownell, Puhl, Schwartz, & Rudd, 2005; Crandall, 1995; Ding & Stillman, 2005; Fairburn et al., 1998; Falkner et al., 1999; Grilo & Masheb, 2001; Maranto & Stenoien, 2000; Neumark-Sztainer et al., 2002; Pingitore, Dugoni, Tindale, & Spring, 1994; Puhl & Brownell, 2001; Strauss & Pollack, 2003), it is comprehensible that these women are marked

considerably by shape and weight concerns compared to normal weight individuals. However, there is evidence that overweight women with BED are even more dissatisfied with their body than overweight women without BED. For example, a study conducted by Svaldi, Caffier, Blechert, and Tuschen-Caffier (2009) found women with BED to score almost twice as high on the body shape questionnaire (Cooper, Taylor, Cooper, & Fairburn, 1987) than a healthy overweight control group. Considering the comparable exposure to negative comments about shape and weight, it is still unclear why women with BED are so much more dissatisfied with their body than overweight women without eating disorders.

Cognitive theories about the cause and maintenance of body dissatisfaction have focused on the relevance of cognitive biases. Vitousek and Hollon (1990) suggest that cognitive biases in eating disorders may arise from maladaptive schemata associated with food, shape, weight and self. In line with that, Williamson, Muller, Reas, and Thaw (1999) propose that such cognitive biases of attention, memory, judgment and body-image are responsible for the typical eating, shape and weight concerns eating-disordered patients usually express. Empirical evidence for a memory bias stems from a study conducted by Sebastian, Williamson, and Blouin (1996). The authors compared 30 eating-disordered subjects (AN, BN and eating disorders not otherwise specified [EDNOS]), 30 weight preoccupied controls and 30 healthy controls on a word

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recall memory task including fatness-related, nonfat and neutral words. Results indicate that eating-disordered subjects recalled significantly more fatness-related cues compared to the two control groups. Similarly, [Hermans, Pieters, and Eelen \(1998\)](#) used a recall test to compare patients with AN to healthy controls (HC) using four types of words: AN-related and three types of AN-unrelated words (positively, negatively valenced and neutral). Results revealed that patients with AN recalled significantly more AN-related words than words from the other categories, while there was no such difference in HC.

The transfer of such a theory to BED has its limitations, however. First of all, studies testing memory bias in eating disorders have yielded contradictory results. For example, [Hermans et al. \(1998\)](#) did not find any difference between patients with AN and HC on a word completion task. Similarly, [Sebastian et al. \(1996\)](#) found subjects with various eating disorders to retrieve significantly more fatness-related words than control words, but the authors did not include positively valenced words and did not control for levels of depression. Hence, rather than being the result of an activation of negative self-schemata, the bias for fatness-related stimuli may have been a bias for negative words in general. Second, and more importantly, there is evidence of a bias towards negative body-related words in overweight individuals as well. For example [King, Polivy, and Herman \(1991\)](#) compared restrained and unrestrained eaters, patients with AN and obese women on the words they would retrieve from an essay. Included target words was weight-, food-, and appearance-related information. Results revealed that similar to patients with AN, obese women recalled significantly more weight- and food-related items than other items. Given the comparable experience of stigmatization reported by overweight women with and without BED, the bias towards negative body-related information may thus not be the differentiating factor between overweight women with and without BED. In a study conducted by [Agliata, Tantleff-Dunn, and Renk \(2007\)](#), girls with high body dissatisfaction recalled significantly fewer positively valenced body-related words compared to negatively valenced and neutral words. Hence, the capacity to focus on positive body-related information may be a protective factor against body dissatisfaction. We reasoned that such a skill may be even more important in the face of frequent weight teasing and discrimination.

In light of the research just mentioned, the following hypotheses were stated. First, both women with BED and overweight women without BED are supposed to be characterized by a memory bias towards negatively valenced shape and weight-related cues. Second, compared to overweight women without BED, women with BED are supposed to have a reduced explicit memory recall for positively valenced shape and weight-related cues.

## 2. Method

### 2.1. Participants

Eighteen women with BED and 18 overweight healthy female controls were enrolled in the study. The study was approved by the ethics committee of the University of Freiburg. All participants were respondents to newspaper advertisements and announcements looking for “women who suffer from binge attacks”. Additionally, they also included an appeal to overweight women without binge attacks to participate in the study, “as it is only possible to get a deeper insight into the problems of binge attacks when having a comparison to women without such problems”. Prior to the diagnostic session, all participants were given a detailed study description and signed informed consent. The inclusion criterion for our clinical group was the presence of BED; exclusion criteria

were the presence of substance abuse or addiction, bipolar disorder, current or past psychosis, schizophrenia, current suicidal ideation, pregnancy or lactation. To be comparable to the clinical group, healthy female controls (HC) were required to have a body mass index ( $BMI = \text{weight}/\text{height}^2$ )  $> 25$ . They were excluded if they were pregnant, lactating, had evidence of subjective binge eating episodes or had a current or lifetime diagnosis of any mental disorder, as indicated by the *Diagnostic and statistical manual of mental disorders* (DSM-IV-TR; APA, 2000). All diagnoses were determined by means of the Structured Clinical Interview for DSM-IV Axis I (SCID; Spitzer, Williams, Gibbon, & First, 1992; Wittchen, Zaudig, & Fydrich, 1997, German version) and the Eating Disorder Examination (Cooper & Fairburn, 1987; Hilbert & Tuschen-Caffier, 2006, German version).

### 2.2. Materials

#### 2.2.1. Recall test

*Recall test – stimuli:* Four word categories were used in the experiment. Category one comprised 10 positively valenced words with body (i.e. shape/weight) related content (positive body-related words; e.g., attractive, gracile), category two comprised 10 positively valenced cues without body-related content (positive control words; e.g., happy, creative); category three included 10 negatively valenced words with body-related content (negative body-related words; e.g., fat, flabby) and category four included 10 negatively valenced cues without body-related content (negative control words; e.g., lazy, egoistic). To control for primacy and recency effects (e.g., [Murdock, 1960](#); [Postman & Phillips, 1965](#)), three neutral fillers were presented at the beginning and at the end of the experiment. Target words were randomized within and for each trial with the exception that words of the same category were not presented successively.

Target words were taken from a pool of previously evaluated words. Twenty students had rated 225 words on the following dimensions: valency, relation to shape/weight and fluency. Valency was rated on a visual analogue scale which was rated from 1 to 5. Relation to shape/weight as well as fluency were rated on an 8-point Likert-like scale ranging from 1 (not at all) to 8 (very much). Additionally, words were scored for their number of syllables. Using analyses of variance, 10 words which fitted best the respective category were used (e.g., positive body-related words differed from positive control words on the shape and weight dimension, but not on the valence dimension; see [Tables 1 and 2](#) for means, SD and statistics). Further, the four categories did not differ on fluency and number of syllables.

*Recall test – procedure:* Target words were presented in Presentation (Neurobehavioral Systems 2007). Participants were shown target words with the instruction to press the number of syllables on the keypad right after the presentation of each word as fast as possible. Following pilot testing of three words, the syllable

**Table 1**  
Means (SD) with regard to the word categories used in the recall test.

	PB (n = 10)	PC (n = 10)	NB (n = 10)	NC (n = 10)
Valency	1.74 (0.28)	1.37 (0.22)	3.92 (0.65)	4.33 (0.36)
Shape/weight relation	6.48 (1.04)	1.99 (0.31)	6.72 (0.74)	2.21 (0.73)
Fluency	7.65 (0.38)	7.92 (0.67)	7.72 (0.26)	7.68 (0.22)
Number of syllables	2.00 (0.82)	2.60 (0.84)	2.00 (0.82)	2.90 (0.93)

Note. PB = positively valenced words with body-related content; PC = positive control words; NB = negatively valenced words with body-related content; NC = negative control words; valency was rated on visual analogue scales and scored from 1 to 5; shape/weight relation and fluency were rated on Likert-like scales from 1 (not at all) to 8 (very much).

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