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Erratum

Erratum to 'The shaping role of hunger on self-reported external eating status' [Appetite 57 (2) (2011) 318–320]

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Abstract: As people are relatively incompetent in assessing the impact of visceral states on their behavior, two studies tested the hypothesis that hunger affects the extent to which people assess themselves as external eaters. In Study 1 participants' current self-reported hunger states were linked to their scores on an external eating scale. Hungrier participants perceived themselves more strongly as external eaters. In Study 2 hunger was experimentally manipulated, after which self-reported external eating was assessed. Hunger was found to affect people's self-reported external eating status, such that hungry participants scored higher and above the average norm score on external eating compared to satiated participants, who scored below this average norm score. The key implications of these findings are discussed.

Introduction

In Western societies excessive food intake has become a more serious threat for human health than hunger and shortage of food (Pinel, Assanand, & Lehman, 2000). An important factor that has been linked to overeating is our 'obesogenic' food environment with an enduring availability of high caloric foods (French, Story, & Jeffery, 2001). People who typically face problems in dealing with this environment are so called 'external eaters'. They can be defined as those individuals with the tendency to overeat in response to external food-related cues like the sight, smell, and taste of palatable food, regardless of their physical need for food (Rodin, 1980; Van Strien, Schippers, & Cox, 1995).

External eating is considered a highly problematic eating style due to its association with higher body weights (Elfhag & Linné, 2005), more unhealthy food intake (Van Strien, 2000), and increased risk of relapse in eating disorders and obesity (e.g., Jansen et al., 2003; Nederkoorn, Smulders, Havermans, & Jansen, 2004). It has even been suggested that classification of overeaters as external eaters should guide treatment selection, in such a way that overweight people scoring high on the external eater scale need behavior therapy (Van Strien, 2006; but see Jansen et al., 2011). Therefore, it is highly important to know who can be classified as an external eater.

The Dutch Eating Behavior Questionnaire (DEBQ: Van Strien, Frijters, Bergers, & Defares, 1986) includes an External Eating (EE) subscale that aims to identify this type of eater. Apart from the EE-subscale, the DEBQ also contains the Restraint Eating subscale to classify the restrained eater and an emotional eating subscale to identify the emotional eater. Research on this latter scale has revealed that the induction of negative affect increased the level of the self-reported tendency to eat when emotional (Bekker, Van de Meerendonk, & Mollerus, 2004). Just like the self-assessment of emotional eating thus seems to be affected by an individual's emotional state, we assume that the way in which individuals report on their external eating behavior also varies according to their visceral state.

Visceral states are internal bodily states that guide behavior in the direction of satisfying bodily needs. When hungry, for example, the body creates a desire for food consumption, particularly for high-caloric foods. Research has convincingly shown that people often underestimate the influence of visceral drives on their subsequent behavior, specifically when they do not experience that particular drive at the moment of assessment. When people are in *hot* states (such as being sexually aroused, hungry, or emotional), they appreciate the influence of past or future hot states, whereas people in neutral or *cold* states chronically underestimate the impact of these hot states (Van Boven & Loewenstein, 2003). This so called 'empathy gap' has important implications. Hungry shoppers, for example, often purchase more food than they had anticipated; more so than satiated shoppers (Nisbett & Kanouse, 1969). Moreover, dieters craving food assess the difficulty of losing weight rather realistically, whereas satiated dieters optimistically underestimate how difficult this will be (Nordgren, van der Pligt, & van Harreveld, 2008). Likewise, satiated people overestimate their capacity to control their hunger cravings compared to hungry people and, consequently, expose themselves to more food temptations (Nordgren, van der Pligt, & van Harreveld, 2009).

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External eating seems to be a type of behavior that is typically vulnerable to the visceral drive of hunger. That is, people in a hungry state are more tempted by external food cues, like the sight of food, than those in a satiated state (Seibt, Häfner, & Deutsch, 2007). Indeed, research has shown that food stimuli capture attention sooner and longer in hungry participants than in satiated participants, thus indicating that hunger selectively biases attention toward food cues (Piech, Pastorino, & Zald, 2010). Importantly, just like people are not competent in assessing the impact of visceral states on their behavior, they may also not be competent in assessing themselves as an external eater – precisely because they mispredict how a visceral state like hunger drives their eating behavior. Thus, in our view, people's tendency to assess themselves as an external eater is fundamentally linked with the hunger state that drives eating behavior. Accordingly, we assume that hunger affects the extent to which people assess themselves as external eaters, such that people in a hungry state more strongly report that they are external eaters than people in a satiated state.

The present studies

In two studies we tested the hypothesis that hunger enhances the level of self-perceived external eating. In Study 1 this was tested by linking participants' current hunger states to their scores on the EE-subscale. In Study 2 hunger was experimentally manipulated by bringing participants into a hungry or satiated state, after which they filled out the EE-subscale.

Study 1

Hunger and external eating were assessed by self-reports in order to test the hypothesis that the level of hunger predicts the level of external eating.

Method

Participants and procedure

As part of a larger study, visitors of several health-related websites and an internet site of a national newspaper were presented with a link inviting all female visitors to participate in a study on eating behavior. This link was placed on the website together with a general article on eating behavior.

In this study 382 women participated. Average age was 29.79 (SD = 10.81) and mean BMI was 23.79 (SD = 4.59). Nearly 30% of the sample was student; over 60% was working; 10% indicated that they were neither studying nor working. Across all participants, 78% had followed higher education.

Questionnaire

Participants completed the DEBQ (Van Strien et al., 1986) in order to assess the extent of external eating (EE-subscale: 10 items: α = .82 on five-point scales ranging from 'never' to 'very often') an example being: "If food smells and looks good, do you eat more than usual?". Next, besides some demographical variables, participants had to indicate the extent to which they felt hungry, ranging from 1 (*not hungry at all*) to 4 (*very hungry*).

Results and discussion

Mean scores, standard deviations, and intercorrelations are presented in Table 1. Hunger was associated with external eating status, with hungrier participants scoring significantly higher on the EE-subscale, r = .17, p = .001. This is a first indication that hunger is related to the extent to which people see themselves as external eaters. A limitation of this study was that hunger was assessed with only one item and that it was assessed after filling in the EE-subscale; individuals high in external eating may have experienced hunger in response to reading and responding to the EE-subscale items to a higher degree than individuals low in external eating. Moreover, as this study entailed only correlational evidence, it remains unclear to what extent hunger is truly responsible for participants' scores on the EE-subscale.

Table 1
Means, standard deviations, and correlations (Study 1).

	1	2	3
1. BMI	–		
2. Hunger	−.04	–	
3. EE-subscale	.13	.17**	–
M	23.79	1.58	–
SD	4.59	.74	.68

** p < .01.

Study 2

In order to address the limitations mentioned above, hunger was manipulated in Study 2. The EE-subscale was assessed either before participants had breakfast (hungry condition) or after they had breakfast (satiated condition). Moreover, in order to assess whether the effect of this hunger state is specific for the assessment of one's external eating status or also generalizes to the other eating styles, also the Restraint Eating (Rs) and Emotional Eating (EmE) subscales of the DEBQ were taken into account.

Method

Participants and procedure

Female university students (N = 74) participated in this study for course credit. Average age was 22.08 (SD = 2.41) and mean BMI was 21.06 (SD = 1.75).

The study was presented as a study on students' eating habits. Participants were informed upon scheduling an appointment that they were not allowed to eat from 11 pm the evening before participation; they were only permitted to drink water. At the day of participation, subjects arrived at the university canteen between 9.00 and 9.30 am and were seated individually in a quiet corner. After signing informed consents, participants were randomly assigned to one of two conditions. In the *hungry condition* (n = 36) participants completed a questionnaire including the DEBQ. When finished, they received breakfast. In the *satiated condition* (n = 38) participants first received breakfast and then completed the same questionnaire. Along with providing the breakfast, participants were told that it did not matter how much or what they consumed, but that it was important to eat such an amount that they would feel satiated. After completion, participants were debriefed and provided with course credit.

Questionnaire

In order to check whether participants in the hungry condition were more hungry than those in the satiated condition, they had to indicate the extent to which they were hungry, felt like eating something, and felt like having a bite on seven-point scales ranging from 1 (*not at all*) to 7 (*very much*). These three items were combined into a hunger scale (α = .95). Next, besides some demographical variables, the DEBQ was assessed, including the EE-subscale (α = .78), the Rs-subscale (α = .92), and the EmE-subscale (α = .90).