Research report

Motives for eating tasty foods associated with binge-eating. Results from a student and a weight-loss seeking population ☆

M.M. Boggiano [a],[*],[1], E.E. Burgess [a], B. Turan [a], T. Soleymani [b], S. Daniel [b], L.D. Vinson [b], K.L. Lokken [c], B.C. Wingo [b], T. Morse [a]

[a] Department of Psychology, University of Alabama at Birmingham, USA
[b] Department of Nutrition Sciences, University of Alabama at Birmingham, USA
[c] Department of Psychiatry and Behavioral Neurobiology, University of Alabama at Birmingham, USA

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ABSTRACT

The aim of this study was to use the Palatable Eating Motives Scale (PEMS) to determine if and what motives for eating tasty foods (e.g., junk food, fast food, and desserts) are associated with binge-eating in two diverse populations. BMI and scores on the PEMS, Yale Food Addiction Scale (YFAS), and Binge-eating Scale (BES) were obtained from 247 undergraduates at the University of Alabama at Birmingham (UAB) and 249 weight-loss seeking patients at the UAB EatRight program. Regression analyses revealed that eating tasty foods to forget worries and problems and help alleviate negative feelings (i.e., the 4-item Coping motive) was associated with binge-eating independently of any variance in BES scores due to sex, age, ethnicity, BMI, other PEMS motives, and YFAS scores in both students ($R^2 = .57$) and patients ($R^2 = .55$). Coping also was associated with higher BMI in students ($p < 0.01$), and in patients despite their truncated BMI range ($p < 0.05$). Among students, the motives Conformity and Reward Enhancement were also independently associated with binge-eating. For this younger sample with a greater range of BES scores, eating for these motives, but not for Social ones, may indicate early maladaptive eating habits that could later develop into disorders characterized by binge-eating if predisposing factors are present. Thus, identifying one's tasty food motive or motives can potentially be used to thwart the development of BED and obesity, especially if the motive is Coping. Identifying one's PEMS motives should also help personalize conventional treatments for binge-eating and obesity toward improved outcomes.

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Introduction

Binge-eating disorder (BED) is a stable and aberrant pattern of eating where unusually large amounts of food are consumed, in a discrete period of time, with a sense of loss of control over how much or what is eaten and that is accompanied by intense embarrassment, disgust, or shame, and distress. It is now an officially codified eating disorder (American Psychiatric Association, 2013; Pope et al., 2006). Yet BED, and other binge-eating conditions including sub-threshold BED and bulimia nervosa are still lacking treatments with lasting efficacy and for many individuals, current treatments are not even initially effective (Halmi, 2013; Wilson, Grilo, & Vitousek, 2007; Wonderlich, de Zwaan, Mitchell, Peterson, & Crow, 2003). Moreover, the lifetime duration of these disorders, particularly of BED, are chronic (American Psychiatric Association, 2013; Pope et al., 2006). Acknowledging the truth behind the axiom that prevention is the best treatment, one method of preventing disorders characterized by binge-eating is to identify cognitive and behavioral factors associated with binge-eating. In line with this belief, we recently developed a questionnaire that identifies one's motives for consuming highly palatable foods or drinks. The impetus behind developing this scale, the Palatable Eating Motives Scale or PEMS (Burgess, Turan, Lokken, Morse, & Boggiano, 2013), was the belief that not all obese individuals eat highly tasty foods for the same reason. Ultimately, knowing one's specific motive for eating these palatable foods, which likely contributes to an individual's over-weight status since they are eaten for reasons other than a metabolic deficit, may yield better treatments. We recently reported that one motive in particular, that of Coping (one of the four PEMS motives reflecting a tendency to eat palatable foods to deal with problems, worries, or negative moods), was associated with higher BMI in a sample of undergraduate students (Burgess et al., 2013).

The PEMS instructions define "tasty foods or drinks" as desserts, junk food, fast foods, fried foods, sweetened beverages, or other salty snacks. These types of foods are salient to BED. They are preferred and craved during binges, are more likely to be consumed for reasons other than hunger, their high palatability would render them more difficult to limit or to control, and their greater caloric value would contribute to the distress, shame, and guilt that is characteristic of BED and other binge-eating conditions (Boggiano, Turan, Maldonado, Oswald, & Shuman, 2013; Dalton, Blundell, & Finlayson, 2013; Davis et al., 2008, 2009; Drewnowski, 1998; Gendall, Sullivan, Joyce, Carter, & Bulik, 1997; Hill & Peters, 1998; Kales, 1990; Thomas, Doshi, Crosby, & Lowe, 2011; White & Grilo, 2005; Witt & Lowe, 2014; Yanovski, 2003). The PEMS differs from other eating-related cognitive and behavioral measures in that it probes why one eats palatable foods (i.e., eating as a means to meet a certain end) rather than assessing addictive-like behavior with food (Gearhardt, Corbin, & Brownell, 2009) or the extent to which various emotions and cues trigger food intake (Arnow, Kenardy, & Agras, 1995; van Strien, Frijters, Bergers, & Defares, 1986). It also focuses exclusively on palatable food intake and not on the consumption of all foods in general (Steptoe, Pollard, & Wardle, 1995). Individuals are not always aware of the motives behind their behavior and being aware of their motives is often the first step in changing behavior (Bandura, 1977; Cardi, Clarke, & Treasure, 2013). The PEMS is a tool that brings awareness to both the person being tested and the tester regarding the person's motives behind consuming highly palatable foods or drinks. This knowledge should help individuals at risk for binge-eating conditions or already suffering from them. It should also aid clinicians by allowing them to better tailor cognitive-behavioral and other treatment approaches toward improved outcomes.

Therefore, the current study was designed to test the hypothesis that the PEMS could be used to demonstrate motivation-based associations not only with higher BMI in regression models, but also with greater severity of binge-eating. It is important to note that obesity and binge-eating, while highly correlated, are theoretically distinct constructs. Weight or BMI status is not a criterion for BED. The behavior of binge-eating can occur in non-obese individuals with other eating disorders such as anorexia nervosa and bulimia nervosa. The key difference between BED and these other eating disorders is that the binge-eating occurs in the absence of any compensatory behaviors (American Psychiatric Association, 2013). Obesity and binge-eating are independently heritable as implicated in human (Bulik, Sullivan, & Kendler, 2003) and animal studies (Boggiano et al., 2007). Obese binge-eating individuals also display greater psychopathology, personality disturbance, impulsivity, reward sensitivity, and overall decreased quality of life than do non-binge-eating obese individuals (American Psychiatric Association, 2013; Bulik et al., 2003; Schag, Schönleber, Teufel, Zipfel, & Giel, 2013). Therefore it was important to test whether motives for eating tasty foods were associated with binge-eating independently of BMI. Hence BMI was controlled in the analyses of this study.

An additional aim of the study was to determine if PEMS motives associated with binge-eating differ according to the type of population tested. For this reason we chose to study two groups. One was a sample of 247 undergraduate students. This represented a normative sample of young adults but also a group with an average age just younger than the typical age of onset for BED which is approximately 25 years of age (Hudson, Hiripi, Pope, & Kessler, 2007). We also studied a group of 249 older weight-loss seeking individuals. This represented a clinical sample and one in which a greater portion of the individuals would be expected to suffer from BED given the high comorbidity between BED and obesity (Grucza, Przybeck, & Cloninger, 2007; Hudson et al., 2007; Yanovski, Nelson, Dubbert, & Spitzer, 1993).

Materials and methods

Participants and procedures

Undergraduate student sample

A total of N = 247 students at the University of Alabama at Birmingham (UAB) were recruited through the Introductory Psychology course subject pool. They participated either for required research credits or extra credit. Additional students were recruited through flyers and were compensated with a $10 Visa card. Of the pool of 247 students, N = 150 came into the lab to complete a demographics survey, then had their height and weight measured for a body mass index (BMI). They then completed the Palatable Eating Motives Scale (PEMS), the Yale Food Addiction Scale (YFAS), and the Binge-eating Scale (BES). The other N = 97 students were tested in a classroom. They self-reported height and weight which we later calculated into a BMI. They completed a demographic sheet, the PEMS and the BES but not the YFAS due to time constraints. We conducted regression analyses with and without BMI in the model to test its effect on any PEMS motives associated with binge-eating. Only the N = 150 students that completed the YFAS were used in regression models that included the YFAS as an independent correlate of binge-eating.

EatRight patients

A total of N = 249 patients enrolled in the EatRight program of the University of Alabama at Birmingham were tested. They enrolled with the goal of losing weight, many because of weight-related medical complications, and to learn healthier eating habits. They represented a weight-loss seeking population. As with the group of N = 150 students, the EatRight patients had their height and weight measured by clinic staff to calculate BMI then provided demographic information and completed the PEMS, BES, and YFAS questionnaires. This took place during their initial visit to the program, prior to the weight-loss intervention. This study used informed consent from all patients and was approved through two separate protocols by the UAB Internal Review Board.

Questionnaires

Palatable Eating Motives Scale (PEMS)

The PEMS is a recently developed questionnaire that has good internal reliability and good convergent, incremental, and discriminant validity with existing measures of aberrant food intake and sensitivity to reward or punishment (Burgess et al., 2013). The PEMS is comprised of 19 Likert-like frequency response items that factor into four motives for eating tasty foods or drinks: Coping, Reward Enhancement, Conformity, and Social motives. Responses on each item are scored from 1 ("Almost Never/Never") to 5 ("Almost Always/Always"). All of the motives are composed of 5 items (or questions) except Coping which is composed of 4 items. Example questions are: "How often do you eat these tasty foods to forget about your problems? (Coping), ". . .because it's exciting" (Reward Enhancement), ". . .to fit in with a group you like" (Conformity), and ". . .to celebrate a special occasion with friends" (Social). The possible score range for each motive is therefore 5–25, with the exception of Coping, which has a possible score range of 4–20. Motive scores can be weighted equally by multiplying the Coping sum by 1.25 if using the sum of responses, or by obtaining the mean of the Likert-like response values rather than the sum of the responses. A PEMS total score is obtained by summing across all 19 item responses so can range from 19 to 95 or by summing the means of each motive. The PEMS total score reflects the frequency with which tasty foods are consumed for non-metabolic reasons (e.g., individuals who generally eat tasty foods to stave off hunger would obtain a very low PEMS total score). The complete scale and items that comprise each motive