



Loss of control eating and psychological maintenance in children: An ecological momentary assessment study[☆]

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ABSTRACT

Objective: Recent research suggests that binge eating is a common experience in youth. However, it remains largely unknown how children's binge eating presents in everyday life and which psychological factors serve to maintain this binge eating.

Methods: Children aged 8–13 years with binge eating ($n = 59$), defined as at least one episode of loss of control (LOC) over eating within the past three months, and 59 matched children without LOC history were recruited from the community. Following a combined random- and event-sampling protocol, children were interviewed about their day-to-day eating behavior, mood, and eating disorder-specific cognitions using child-specific cell phones during a 4-day assessment period in their natural environment.

Results: LOC episodes led to a significantly greater intake of energy, particularly from carbohydrates, than regular meals of children with and without LOC eating. While LOC episodes were preceded and followed by cognitions about food/eating and body image, there was minimal evidence that negative mood states were antecedents of LOC eating.

Conclusions: The results provide support for the construct validity of LOC eating in children. Maintenance theories of binge eating for adults apply to children regarding eating disorder-specific cognitions, but the association with affect regulation difficulties requires further investigation.

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Introduction

Recent research indicates that binge eating is a common and psychopathologically relevant experience in youth. However, it remains largely unknown how children's binge eating presents in everyday life and which psychological factors serve to maintain this binge eating. Therefore, the current study's goal was to examine food intake and the psychological maintenance of binge eating in the natural environment of primary school children.

Binge eating, defined as eating a large amount of food accompanied by a sense of loss of control over eating (i.e., objective bulimic episode; Fairburn & Wilson, 1993), occurs in 6.2% of 6–12 year old normal- and overweight children (Tanofsky-Kraff et al., 2004). The experience of loss of control (LOC) over eating,

independent from the amount of food consumed, seems to affect even more children and adolescents, especially when they seek treatment for overweight (Decaluwé & Braet, 2003; Glasofer et al., 2007; Goldschmidt, Jones, et al., 2008; Goossens, Braet, & Decaluwé, 2007; Levine, Ringham, Kalarachian, Wisniewski, & Marcus, 2006). However, the presentation of LOC eating in youth is heterogeneous. For instance, the frequency and size of LOC episodes vary considerably, and only a minority of individuals, predominantly adolescents, have clinical levels of psychopathology or fulfill the diagnostic criteria of binge eating disorder (BED)¹ (Eddy et al., 2007; Glasofer et al., 2007; Goldschmidt, Jones, et al., 2008; Goossens et al., 2007; Hilbert & Czaja, in press; Levine et al., 2006; Shapiro et al., 2007; Tanofsky-Kraff et al., 2004; Tanofsky-Kraff, Goossens, et al., 2007). As most of the emerging research relies on retrospective self-report that may be prone to recall biases

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¹ BED is a provisional category in the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition developed for adults (DSM-IV-TR; American Psychiatric Association, 2000). The central definitional criterion is recurrent binge eating without the regular use of inappropriate compensatory behavior to prevent weight gain, such as self-induced vomiting or fasting.

(Shiffman, Stone, & Hufford, 2008), it is warranted to apply methodological approaches involving concurrent assessment of LOC eating to validate the construct of LOC eating in children's everyday lives (Devlin, Goldfein, & Dobrow, 2003).

Among the initial evidence regarding LOC-associated abnormalities in food intake, an analysis of food diaries in youth seeking treatment for obesity showed that those with self-identified binge eating episodes tended to record greater intake of food and energy, associated with greater carbohydrate intake, than those without binge eating episodes (Lourenco et al., 2008). A laboratory test meal study found that overweight children who reported binge eating consumed more energy and exhibited a shorter satiety duration than did children without reported binge eating; however, no group differences were found in the macronutrient composition of test meal intake (Mirch et al., 2006). When asked to describe the foods that they typically consume during LOC episodes, children and adolescents mentioned foods, especially snacks and desserts, with lower protein and more carbohydrate content than those consumed during episodes of regular eating, but without an overall difference in energy intake (Theim et al., 2007). Overall, these few and somewhat inconsistent results suggest that LOC eating in youth emerges against a background of overeating tendencies, potentially associated with a preference of foods rich in carbohydrates. However, the extent to which LOC episodes differ from episodes of normative eating remains unclear. Further, it is indicated to examine whether LOC episodes occur without feelings of hunger as this criterion is part of the adult DSM-IV-TR criteria as well as proposed child-specific research criteria of BED or an LOC eating disorder (Marcus & Kalarchian, 2003; Tanofsky-Kraff, Marcus, Yanovski, & Yanovski, 2008).

Little is known about the psychological factors that maintain LOC eating in children. According to maintenance theories developed for adults (Castonguay, Eldredge, & Agras, 1995; Fairburn, Cooper, & Shafran, 2003) and adapted for children (Goldschmidt, Aspen, Sinton, Tanofsky-Kraff, & Wilfley, 2008), the most pertinent maintenance factors include antecedent negative mood and underlying eating disorder-specific cognitions such as concerns about shape, weight, or eating. Regarding negative mood, a comprehensive interview-based investigation of LOC-associated symptoms in youth retrospectively identified negative mood as an antecedent of LOC eating, while positive mood was a precursor of eating episodes in general (Tanofsky-Kraff, Goossens, et al., 2007). Concomitant mood experiences with LOC eating included a sense of "numbing out," and increased negative mood followed these episodes. Retrospective self-report questionnaire data confirmed that emotional eating, for example, eating in response to sadness, anxiety, or discontentment, and depressive symptoms are associated with increased LOC eating in youth (Eddy et al., 2007; Goldschmidt, Tanofsky-Kraff, et al., 2008; Tanofsky-Kraff, Theim, et al., 2007). These results suggest that LOC eating in youth may indeed be maintained through difficulties in regulating negative affective states. However, the role of eating disorder-specific cognitions remains largely unclear. Initial evidence from studies using cross-sectional structural equation modeling showed that eating pathology, including concerns about shape/weight and restrained eating, predicted greater binge eating severity in youth (Decaluwé & Braet, 2005; Eddy et al., 2007). Given this minimal and retrospective evidence on the psychological maintenance, it is indicated to concurrently examine mood and eating disorder-specific cognitions in relation to children's LOC eating.

The current study utilized an Ecological Momentary Assessment (EMA) design for random- and event-sampling of food intake, mood, and cognitions at the time of their occurrence in the natural environment of primary school children (Shiffman et al., 2008; Smyth et al., 2001). In adults, multiple applications of the EMA methodology have gathered insight into food intake and

maintenance of eating- and weight-related disorders (e.g., Greeno, Wing, & Shiffman, 2000; Hilbert & Tuschen-Caffier, 2007). Initial research with this methodology has demonstrated its utility in diverse pediatric disorders (e.g., Silk et al., 2007; Whalen et al., 2008). For the current EMA study, we hypothesized first, that children with LOC eating would show a greater intake of food, carbohydrates, and energy, especially during LOC episodes, than children without LOC eating, and would also show more hunger before and less satiety after LOC eating; second, that children with LOC eating would endorse more negative mood, less positive mood, and more eating disorder-specific cognitions, especially prior to LOC episodes, than children without LOC eating; and third, that there would be less negative and more positive mood, and less eating disorder-specific cognitions during LOC episodes than preceding or following the LOC episodes. In addition, as recurrent LOC eating is associated with increased psychopathology (Glasofer et al., 2007; Goldschmidt, Jones, et al., 2008; Hilbert & Czaja, submitted for publication), we expected children with recurrent LOC eating to present more pathology in the EMA variables than those with lower frequencies of LOC eating.

Methods

Recruitment and sample

Children aged 8–13 years were recruited from the community either through schools (grades 3–7) or through an advertising campaign utilizing posters, newspaper advertisements, and flyers offering EUR 100 as an incentive for participation in a larger project on eating behavior in children. For both recruitment avenues, eligibility regarding inclusion and exclusion criteria was determined in a telephone interview. Eligible children and their parents interested in study participation were invited to attend a diagnostic session that included diagnostic interviews and self-report questionnaires, and a measurement of body weight and height. The clinical interview Eating Disorder Examination adapted for children (ChEDE; Bryant-Waugh, Cooper, Taylor, & Lask, 1996; Fairburn & Cooper, 1993; German version see Hilbert, Hartmann, & Czaja, in press) was used to ascertain diagnostic status, based on an assessment of LOC episodes over the past three months. The Children's Depression Inventory served to assess depressive symptoms (CDI; Kovacs, 1992; Stiensmeier-Pelster, Schürmann, & Duda, 2000). Ethical approval for the conduct of this study was granted through the German Psychological Society's Ethics Committee. Informed assent and consent were obtained from the child and the participating parent prior to the diagnostic session.

The main inclusion criterion for children with LOC eating (LOC+) was at least one episode of LOC eating during the past three months, defined as such in order to encompass LOC symptomatology over the proposed child-specific diagnostic time frame for BED or an LOC eating disorder (Marcus & Kalarchian, 2003; Tanofsky-Kraff et al., 2008). Further inclusion criteria were age 8–13 years and sufficient German language skills of the child and participating parent. Exclusion criteria were compensatory behaviors (more than once over the past three months); psychotic disorders in child or parent; medical conditions or medication with an effect on eating behavior or body weight; treatment for overweight; special education; or a planned move or commute time of more than 30 min to the laboratory site.

Children without LOC eating (LOC–) were individually matched to the LOC+ children on age, sex, percentile of body mass index (BMI), education (school type and grade), and the mother's education (years of education, as a proxy of socioeconomic status). Inclusion criteria for LOC– children were absence of past or present LOC eating, compensatory behaviors, or of an eating disorder.

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