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Loss of Control Eating Disorder in Children Age 12y and Younger: Proposed Research Criteria

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Abstract

Binge eating is common in middle childhood (6–12y) and often presents in concert with disordered eating attitudes, emotional distress, overweight and adiposity. Binge eating is also predictive of excessive weight gain and is associated with energy intake. However, few children meet DSM-IV-TR criteria for binge eating disorder, thereby making treatment recommendations a challenge. We propose criteria for a new diagnosis, Loss of Control Eating Disorder in Children age 12 years and younger, for further study. The criteria put forward are a revision of Marcus and Kalarchian's (Marcus & Kalarchian, 2003) provisional binge eating disorder research criteria for children 14 years and younger, and are based upon the evolving literature in children with binge and loss of control eating episodes. A rationale for the new criteria set is provided, and future research directions are proposed.

Keywords

binge eating; loss of control eating; middle childhood; overweight

1. Introduction

Binge eating episodes, during which individuals consume a large amount of food and report loss of control over their eating, appear to be common during middle childhood (6–12 y). However, few children meet the Diagnostic and Statistical Manual of Mental Disorders IV-Text Revision (DSM-IV-TR) proposed criteria for binge eating disorder. There may be child-

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specific rationales for the low rate of binge eating disorder among children. Researchers and clinicians may have difficulty identifying disordered eating patterns among young children who may be exhibiting only the early signs of disordered eating. However, it is also possible that the manifestations of binge eating in children may differ from those observed in adults, or that the questions asked on assessment measures of aberrant eating (which are often adapted for child use from adult forms) may not be readily understandable to children. To date, most studies have made use of single-item surveys, self-report questionnaires, parent-reports of their children's behaviors (Field et al., 1999; Morgan et al., 2002; Steinberg et al., 2004) and, only in a minority of cases, interview methodology (Tanofsky-Kraff et al., 2004). Comparisons of these investigations suggest that responses differ based upon the type of measure used and the particular respondent queried. There is poor concordance in observed rates of binge eating when child self-reports are compared to parent-reports of children's behavior (Johnson, Grieve, Adams, & Sandy, 1999; Steinberg et al., 2004) or when child self-reports are compared to results of child interviews (Field, Taylor, Celio, & Colditz, 2004; Tanofsky-Kraff et al., 2003). Similarly, in studies using interview methodology, parent-reports of child binge eating have demonstrated poor concordance with child reports (Tanofsky-Kraff, Yanovski, & Yanovski, 2005), adding to the confusion of what constitutes binge eating in children and whether a distinct syndrome exists during middle childhood. Thus, the criteria for binge eating disorder proposed in the DSM-IV-TR (American Psychiatric Association, APA, 2000) and the assessments used to make that diagnosis may not be appropriate for the assessment of binge eating behaviors among children (Marcus & Kalarchian, 2003).

As a result, most children with loss of control or binge eating episodes are diagnosed as having an eating disorder not otherwise specified (EDNOS), a category designed to capture "residual" cases that do not meet the criteria for an established eating disorder (APA, 1994). As described in the adult (Fairburn et al., 2007; Mitchell et al., 2007) and adolescent (Eddy, Celio Doyle, Hoste, Herzog, & le Grange, in press) literature, most eating disorder cases are identified as EDNOS, and the vast majority of patients with EDNOS have symptoms resembling those of the traditional eating disorders. EDNOS thus includes behaviors as diverse as purging without binge eating, sub-clinical binge eating disorder and bulimia nervosa, when all criteria except frequency are met. Because of the heterogeneity of EDNOS, the category fails to inform "clinical description or treatment" or "define the course of the disorder" including "temporal changes" (p. S124) (Wilfley, Bishop, Wilson, & Agras, 2007). Just as EDNOS in adults and adolescents is an amalgam of individuals with disparate psychological and behavioral presentations who must be treated in distinct fashion, so too there is a need to refine EDNOS into rational components for younger child samples so that further research may elucidate differing etiologies and maintenance factors to inform prevention and treatment efforts. We believe one subgroup within pediatric EDNOS that should be examined separately is the cluster of children who have loss of control (LOC) or binge eating episodes but do not meet criteria for binge eating disorder. We propose that a new, pediatric-specific, LOC eating disorder (Table 1) will be a valid and useful syndrome with prognostic significance. In the following sections, we will discuss the difficulties in separating LOC eating and binge eating in pediatric samples, show that LOC eating in children is associated with overweight, examine the relationship between LOC eating and psychological dysfunction in other areas, and present the evidence that LOC eating has consequences for children's health.

2. Loss of Control (LOC) Eating and Binge Eating Episodes in Children

According to the DSM-IV-TR research criteria for binge eating disorder, a binge is defined as the ingestion of a large amount of food given the context accompanied by the experience of loss of control over eating (APA, 2000). However, determining what constitutes a "large amount of food" in growing children with varying nutritional needs can be difficult. Given the conceptual issues and difficulties in assessment, investigators studying disordered eating in

children have frequently focused on episodes of loss of control eating (LOC eating), defined as eating with the associated experience of being unable to control how much one is eating *independent* of whether the amount of food consumed is objectively large. For clarity, throughout the course of this paper, the term “LOC eating”, as a dichotomous variable (present or not present), will be used to refer to episodes with either objectively large intakes *or* smaller intakes of food where there is a loss of control over eating. The term “binge eating”, will be used when referring to episodes including both the consumption of large amount of food and the experience of LOC.

2.1 Prevalence of LOC Eating and Associations with Overweight

There is an emerging literature that has examined binge and LOC eating in young children. Studies of non-treatment seeking children aged 6 to 14 years using questionnaire and survey reports to assess binge eating have found prevalence ranges from approximately 2% to 10% (Field et al., 1999; Lamerz et al., 2005; Maloney, McGuire, Daniels, & Specker, 1989). None of these investigations assessed for the full DSM-IV-TR criteria for binge eating disorder (APA, 2000). However, using rigorous interview methodology, one study found that among 162 non-treatment seeking overweight and non-overweight children aged 6–13 years, none met full criteria for binge eating disorder, but almost 9% reported LOC eating in the month prior to assessment (Tanofsky-Kraff et al., 2004). A number of studies have demonstrated a relationship between binge (Field et al., 1999; Lamerz et al., 2005) or LOC (Tanofsky-Kraff et al., 2004) eating and high body weight or adiposity in non-treatment seeking youth, such that the prevalence of LOC and binge eating is greater among overweight than non-overweight children

In studies of exclusively overweight middle childhood samples, high percentages of children report LOC eating, with one study of 112 non-treatment-seeking youth (6–10 y) reporting that 5.3% met criteria for binge eating disorder according to questionnaire assessment (Morgan et al., 2002). By contrast, among a sample of 105 non-treatment-seeking overweight children (6–13 years), none met criteria for binge eating disorder based upon interview methodology (Tanofsky-Kraff, Faden, Yanovski, Wilfley, & Yanovski, 2005). However, the latter study found that almost 30% of participants reported at least one lifetime LOC eating episode. Data from two overweight, treatment-seeking, middle childhood samples have suggested that prevalence rates of binge 15% (Levine, Ringham, Kalarchian, Wisniewski, & Marcus, 2006) and LOC 37% (Tzischinsky & Latzer, 2006) eating are substantial; however, neither study detected any cases of binge eating disorder among participants.

Findings from a recent laboratory study have provided additional support for the notion that that binge eating during middle childhood may be an important construct. When overweight, treatment-seeking children aged 6–12 years who reported binge eating episodes were compared to those who did not, the binge eating group became hungry more rapidly following a fixed calorie preload, reported a greater desire to eat, and ingested more energy during a laboratory test meal (Mirch et al., 2006). Therefore, binge eating, and potentially LOC eating, appears to be both a reported and observed phenomenon.

2.2 LOC Eating and Psychological Dysfunction

The correlates of LOC eating are similar to those of classic binge eating episodes characterized by the consumption of a large amount of food. Across studies, binge and LOC eating have been consistently associated with maladaptive or dysfunctional cognitions and attitudes related to eating, shape and weight. Compared to children who endorse overeating episodes without LOC or no such episodes, those with LOC report significantly more of the cognitive and attitudinal correlates of disordered eating on self-report measures (Morgan et al., 2002) and in semi-structured interviews (Levine et al., 2006; Tanofsky-Kraff, Faden et al., 2005; Tanofsky-Kraff

et al., 2004). Furthermore, studies of overweight children have reported that those who endorse LOC eating report significantly more general psychopathology than do children without such behaviors (Morgan et al., 2002; Tanofsky-Kraff, Faden et al., 2005). LOC eating has been associated with anxiety, depressive symptoms (Morgan et al., 2002), ineffectiveness, lower self-esteem, and parent-reported externalizing problems (Tanofsky-Kraff, Faden et al., 2005). In summary, like binge eating disorder, LOC eating in children is associated with other symptoms of disordered eating and may be associated with poorer psychosocial functioning.

2.3 Course of LOC eating in children

To date, there are no available data regarding the stability of LOC eating in children over time. However, and of serious concern, studies indicate that children who self-report binge eating episodes tend to experience greater weight and fat gain over time compared to youth who do not report binge eating. In a large study of 9 to 14 year-old boys and girls, Field and colleagues (Field et al., 2003) found that binge eating (as assessed by survey reports) independently predicted weight gain among 6769 boys over three years. In another study of 146 children assessed at the age of 6–12 years, all of whom were overweight or had a family history of obesity (Whitaker, Wright, Pepe, Seidel, & Dietz, 1997), binge eating at baseline predicted additional increases in body fat mass four years later (Tanofsky-Kraff et al., 2006). These data are consistent with prospective studies of adolescent (Stice, Cameron, Killen, Hayward, & Taylor, 1999) and adult (Fairburn, Cooper, Doll, Norman, & O'Connor, 2000) samples. Finally, although it is unclear whether or not early LOC eating is a precursor to diagnosable eating disorders in adolescence, the relationship between LOC eating and elevated rates of cognitive symptoms of disordered eating raises concern. Weight concerns (Killen et al., 1996; Killen et al., 1994) and thin body preoccupation (McKnight Investigators, 2003) have been shown to predict partial or full-syndrome eating disorders in adolescent samples.

The pediatric literature examining the impact of LOC eating in relation to weight loss treatment outcome is limited. Epstein and colleagues found no significant changes in binge eating behaviors following family-based behavioral weight loss treatment for 8–12 year old children (Epstein, Paluch, Saelens, Ernst, & Wilfley, 2001). By contrast, in a sample of obese youth (7–17 years) taking part in an inpatient non-diet healthy lifestyle program focusing upon healthy eating, moderate exercise and cognitive-behavioral treatment, the mean frequency of binge eating episodes was significantly lower at both post-treatment and 14 month follow-up (Braet, Tanghe, Decaluwe, Moens, & Rosseel, 2004). A third study examined the impact of LOC eating on weight loss achieved during a family-based behavioral program for 8–13 year old children (Levine et al., 2006). Following treatment, children reporting LOC experienced similar weight loss to those not reporting LOC. However, only 50% of children with baseline LOC eating completed treatment compared with 70% of participants without pre-treatment baseline LOC eating. Further investigation is required to determine whether or not LOC eating complicates weight-loss treatment outcome.

3. Proposal for LOC Eating Disorder in Children (12 years and younger)

The literature suggests that pediatric LOC eating is characterized by psychological distress and the development or maintenance of excess body weight, but that few children meet DSM-IV-TR (APA, 2000) criteria for binge eating disorder. Thus the existing criteria do not adequately identify children with LOC eating behaviors (Marcus & Kalarchian, 2003). To stimulate research on disordered eating in children, in 2003 Marcus and Kalarchian proposed provisional binge eating disorder research criteria for children 14 years and younger (Marcus & Kalarchian, 2003) (Table 1).

The Marcus and Kalarchian criteria emphasized LOC eating (criterion A1) in combination with eating in the absence of hunger (criterion A2), a behavior that has been posited to be an early

indicator of disinhibited eating in younger children (Faith et al., 2006; Fisher & Birch, 2002). Criterion B of the proposed criteria included correlates of LOC eating suggested by the research literature at that time including “food seeking in response to negative affect (Carper, Orlet Fisher, & Birch, 2000), and sneaking food (30). To date, one study has tested Marcus and Kalarchian’s proposal using an interview specifically designed to assess for the provisional criteria (Shapiro et al., 2007). Using a weight-loss treatment-seeking sample of 5–13 year-olds, the authors found that 30% of the sample met the provisional criteria for childhood binge eating disorder (Shapiro et al., 2007). This study, however, is limited in that the methodology did not allow children to fully describe their behavioral and emotional experiences during LOC eating episodes.

In an attempt to characterize further the phenomenology of LOC eating in children and adolescents, researchers from multiple locations interviewed 445 youth about their eating patterns using the semi-structured Eating Disorder Examination (either the original or the child version), supplemented with additional probes to assess the circumstances surrounding a binge or LOC eating episode (Tanofsky-Kraff et al., 2007). After determining the presence or absence of LOC during eating, each participant was queried about the contextual, behavioral, physical and emotional aspects of aberrant eating episodes during the past month. The results from a hierarchical cluster analysis revealed that adolescents reporting LOC eating behaviors have a presentation similar to adults with binge eating disorder (Tanofsky-Kraff et al., 2007). However, in an examination of only middle childhood (6–12 years) participants, hierarchical cluster analysis revealed a somewhat different set of characteristics from adolescents. In addition to reporting LOC eating, children tended to report that the episode took place at a home other than their own and in the afternoon, and that they were eating more than others. These children reported experiencing a negative emotion and a trigger prior to the episode, eating in secret, and feeling numb. LOC eating was also associated with eating despite a lack of hunger and consuming more than others. Lastly, children 12 years and younger with LOC reported negative affect before and after the eating episode (Tanofsky-Kraff et al., 2007). These data suggest that LOC eating in middle childhood may present differently in older children and adolescents.

Based upon the growing evidence base, we propose a revised set of criteria that extends Marcus and Kalarchian’s (2003) provisional criteria to be empirically tested. Table 1 lists provisional criteria for Loss of Control Eating Disorder (LOC-ED) in children age 12 years and younger. These preliminary criteria are proposed for the specified age group based upon findings from the recent multi-site study described (Tanofsky-Kraff et al., 2007). In order to avoid re-defining the term “binge,” LOC eating is used to describe consumption of food while experiencing a lack of control over eating *independent* of the amount of food consumed. We have retained Marcus and Kalarchian’s Criterion A1 and extended Criterion A2 to include “Food seeking in the absence of hunger *or after satiation*.” Many children report that a LOC episode begins as a meal or snack when they are hungry (Tanofsky-Kraff et al., 2007) and that LOC eating occurs after satiation. Furthermore, preliminary data suggest that children do not distinguish between eating in the absence of hunger and eating past satiation, but that both are associated with LOC eating (Ranzenhofer et al., 2007). For Criterion B, we have modified the list of Marcus and Kalarchian’s associated features to incorporate findings from the recent multi-site investigation (Tanofsky-Kraff et al., 2007). Finally, although current data suggest that episodes of LOC eating occurring once a month or more are associated with distress, we have chosen in criterion C a cutoff of two episodes per month to provide a more conservative estimate of the frequency of LOC eating required for a psychiatric diagnosis. As with the proposal as a whole, criterion C requires rigorous testing by multiple research groups. Similar to Marcus and Kalarchian’s (2003) proposal and in concert with proposed modifications for DSM-V binge eating disorder criteria (Wilfley et al., 2007), we have maintained a duration criterion of a least three months. However, the frequency and duration criteria require further investigation, as there are

insufficient data establishing the optimal duration or length of LOC eating patterns for a child-specific diagnosis. Lastly, since some children may meet full DSM-IV-TR criteria for binge eating disorder (Morgan et al., 2002), we have included in Criterion D that LOC-ED will not be diagnosed if binge eating disorder is present.

3.1 Future Directions

Research into the utility and clinical significance of LOC-ED is required. Specifically, 1. Studies of overweight children seeking weight-loss treatment as well as examinations of community samples are necessary to determine prevalence rates of LOC-ED and of each of the proposed diagnostic criteria. Such studies should include an examination of potential sex, racial and ethnic differences in prevalence rates. 2. Different statistical classification schemes should be considered; for example, should LOC-ED be considered a category (as proposed) or as a dimensional system? 3. Data are needed to determine whether LOC-ED is associated with greater levels of disordered eating attitudes, higher rates of co-morbid psychiatric distress, and increased problems in psychosocial functioning compared to children without the disorder or to those with LOC eating at sub-threshold levels. 4. The sensitivity and specificity of an LOC-ED diagnosis warrants investigation. For instance, it should be determined whether the components of LOC-ED co-occur in overweight children with LOC eating (but not LOC-ED), overweight children without LOC or non-overweight controls. 5. The relationship between LOC-ED and body weight warrants examination to determine if the diagnosis is associated with overweight and excessive weight gain prospectively. 6. Studies of prognosis and outcome are required to determine if LOC-ED is a stable condition potentially associated with the development of exacerbated eating problems. In the conduct of future investigations, refining the proposed criteria, in particular assessing the optimal frequency and duration criteria, should be taken into consideration. Lastly, although data supporting a relationship between LOC eating with emotional and eating-related distress have been established, further research is required to determine whether a diagnosis of LOC ED is associated with greater actual food intake and with weight gain over time, as has been found for children reporting binge eating episodes.

4. Conclusion

The emerging literature provides evidence that the prevalence of LOC eating during middle childhood is substantial and appears to be associated with psychological distress and overweight. However, the DSM-IV-TR criteria for binge eating disorder (APA, 2000) do not identify individuals in middle childhood who report LOC eating. Such children are often diagnosed with EDNOS, a category that offers limited insight into the etiology, course, prognosis, and treatment of the syndrome. Based upon findings to date, we propose a new provisional research category, LOC Eating Disorder in children 12 years and younger. Research testing these criteria is required to determine if the syndrome distinguishes children uniquely in need of intervention for eating disturbances and risk of inappropriate weight gain.

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Table 1

Comparison of diagnostic criteria for Binge Eating Disorder in Children and Loss of Control Eating Disorder in Children 12y and Younger.

Provisional Research Criteria for Diagnosing Binge Eating Disorder in Children (Marcus & Kalarchian, 2003)	Provisional Criteria for Loss of Control Eating Disorder (LOC-ED) in Children 12 Years and Younger
A. Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following:	A. Recurrent episodes of LOC eating. An episode of LOC eating is characterized by both of the following:
1. Food seeking in absence of hunger (e.g., after a full meal).	1. A sense of lack of control over eating.
2. A sense of lack of control over eating (e.g., endorse that, "When I start to eat, I just can't stop").	2. Food seeking in the absence of hunger or after satiation.
B. Binge episodes are associated with one or more of the following:	B. The LOC eating episodes are associated with three or more of the following:
1. Food seeking in response to negative affect (e.g., sadness, boredom, restlessness).	1. Eating in response to negative affect.
2. Food seeking as a reward.	2. Secrecy regarding the episode.
3. Sneaking or hiding food.	3. Feelings of numbness (lack of awareness) while eating.
	4. Eating more, or the perception of eating more, than others.
	5. Negative affect following eating (e.g., shame/guilt).
C. Symptoms persist over a period of 3 months.	C. The LOC eating episodes occur, on average, at least twice a month for three months.
D. Eating is not associated with the regular use of inappropriate compensatory behaviors (e.g., purging, fasting, excessive exercise) and does not occur exclusively during the course of anorexia nervosa or bulimia nervosa.	D. Eating is not associated with the regular use of inappropriate compensatory behaviors and does not occur exclusively during the course of anorexia nervosa, bulimia nervosa, or binge eating disorder.