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Family-based treatment (FBT) for loss of control (LOC) eating in youth: Current knowledge and future directions

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Abstract

Loss of control (LOC) eating in youth is a common disordered eating behavior and associated with negative health and psychological sequalae. Family-based treatment (FBT) is an efficacious treatment for adolescent anorexia nervosa and bulimia nervosa (BN) but has not been formally evaluated for adolescents with LOC eating. This study is a secondary data analysis from a randomized controlled clinical trial (NCT00879151) testing FBT for 12–18-year-olds with BN. Data were reanalyzed to examine outcomes for LOC eating episodes, regardless of episode size. Abstinence rates, defined as zero LOC eating episodes (objective or subjective binge episodes) in the previous month, were calculated at the end-of-treatment (EOT), 6-month, and 12-month follow-up time points. Among 51 adolescent participants (M + SD: 15.94 + 1.53 y; 92% female; 23.5% Hispanic; 76.5% Caucasian), FBT significantly reduced LOC eating episodes, with 49% achieving LOC eating abstinence at EOT. At 6-month follow-up, 41% achieved LOC eating abstinence. Of those providing 12-month follow-up data, 73% achieved abstinence. This preliminary exploration suggests that FBT may be effective for youth with LOC eating, regardless of episode size. Additional research is needed to replicate these findings and extend treatments with developmental adaptations for younger children with LOC eating.

Keywords

family-based treatment; loss of control eating; binge eating; adolescents; bulimia nervosa; eating disorders

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Introduction

Loss of control (LOC) eating – the feeling that one cannot stop eating – is one of the hallmark and diagnostic features of binge eating as reported in individuals with bulimia nervosa (BN) and binge eating disorder (BED; American Psychiatric Association, 2013). The prevalence of BN is estimated to be 0.5–1.5% and BED is 0.2–6.1% of adolescents who meet full Diagnostic and Statistical Manual 5th Edition (DSM-5) criteria (American Psychiatric Association, 2013; Bohon, 2019; Smink et al., 2014; Swanson et al., 2011). However, the rates of LOC eating are substantially higher, occurring in approximately 8.5–23% of youth across the weight spectrum, with increased frequency among youth with overweight and obesity (Byrne et al., 2019; Goossens et al., 2009; Matheson et al., 2012; Murray et al., 2022; Olsen et al., 2021; Schlüter et al., 2016). LOC eating is hypothesized to be a more salient marker of distress and eating disorder psychopathology than episode size and is predictive of future BN and BED (Bruzas et al., 2022; Hilbert et al., 2013; Shomaker et al., 2010; Tanofsky-Kraff et al., 2020). Further, LOC eating in youth is associated with increased psychopathology (e.g., depression and anxiety symptoms), marked distress, and poorer quality of life (Byrne et al., 2019; Ranzenhofer et al., 2012; Tanofsky-Kraff et al., 2010). Yet, there are no well-established evidence-based treatments for children with LOC eating. Thus, treatments addressing LOC eating in youth are needed to target disordered eating and associated symptoms while also preventing full syndrome eating disorders, including BED and BN.

Family-based treatment (FBT) is an efficacious treatment for adolescents with anorexia nervosa (AN) and BN (Couturier et al., 2020; Datta et al., 2022; Lock & Le Grange, 2019) with preliminary evidence suggesting its utility in Avoidant Restrictive Food Intake Disorder (ARFID) (Lock, Robinson, et al., 2019; Lock, Sadeh-Sharvit, et al., 2019) and pediatric overweight without binge eating (Loeb et al., 2019). In a recent case report of an adolescent with BED, eating disorder symptoms resolved after 21 weeks of treatment with enhanced FBT (Baker et al., 2023). Although FBT has not been empirically tested for BED or LOC eating directly, two randomized clinical trials utilized FBT for adolescents with BN (Le Grange et al., 2007; Le Grange et al., 2015). These trials found that FBT led to abstinence from BN symptoms in 39% of participants after treatment compared to 18% in supportive psychotherapy and 20% in Cognitive Behavioral Therapy for Adolescents (CBT-A; Le Grange et al., 2007; Le Grange et al., 2015), resulting in classification of FBT for BN as a Level 1 efficacious treatment for BN in adolescents (Datta et al., 2022). Treatments used in adults with binge eating, such as CBT (Linardon et al., 2017), may not translate to young children due to cognitive and developmental differences (Cornacchio et al., 2017; Southam-Gerow & Kendall, 2000). For example, younger children may not be able to independently implement key intervention components of CBT, such as self-monitoring and regulating meal patterns. Children are largely embedded within the family system and extended networks, often with limited autonomy to purchase their own food, prepare meals, and determine eating times (e.g., set school lunch schedule). Additionally, psychological interventions for young children often rely on parents as the agents of change and utilize family support to achieve behavioral goals (Cardy et al., 2020; Cobb, 2023; Dedousis-Wallace et al., 2021). Thus, FBT may be a promising approach.

The current study aims to demonstrate preliminary evidence that FBT is an efficacious treatment for LOC eating episodes in youth. This secondary data analysis utilized data collected from a randomized controlled clinical trial that provided FBT to 12–18-year-old adolescents with BN (NCT00879151; Le Grange et al., 2015). Treatment outcomes for LOC eating episodes, regardless of episode size, were examined. The main hypothesis for this secondary study was that youth receiving FBT would decrease LOC eating from pre-treatment to end-of-treatment, and that these clinical improvements would persist up to one-year post-treatment.

Method

Participants

Adolescents between 12–18 years old who met criteria for DSM-IV-TR BN or partial BN (defined as engaging in binge eating and purging at least once or more per week for six months) were recruited for a two-site treatment study (The University of Chicago and Stanford University). Adolescents had to be living with at least one parent to be enrolled in this study. Recruitment details and procedures are outlined in the main outcomes paper (see Le Grange et al., 2015). Participants were excluded if they were not medically or psychiatrically stable for outpatient treatment, active suicidality, substance dependency, weight less than 85% Estimated Body Weight, or had undergone previous FBT or CBT-A for BN. Youth participants completed assent procedures and parent participants completed consent procedures as approved by the Institutional Review Board at the respective site where they were enrolled (eProtocol number 132056).

Study design

Following a telephone screening to determine eligibility and completion of baseline assessment procedures, participants were randomized to receive one of three manualized treatments – FBT for BN (Le Grange & Lock, 2009), Cognitive Behavioral Therapy for adolescents (CBT-A; Lock, 2005), or Supportive Psychotherapy (SPT; Le Grange et al., 2007). For this study, only the outcomes for participants receiving FBT were analyzed, as this exploratory study was not designed as a comparator study to test LOC outcome differences based on psychotherapeutic intervention. Assessments were conducted at baseline (pre-treatment), end-of-treatment (EOT), 6-month follow-up, and 12-month follow-up.

Measures

Loss of control (LOC) eating episodes.—The Eating Disorder Examination (EDE; Cooper & Fairburn, 1987) is a widely-used semi-structured interview that assesses behavioral and cognitive symptoms for eating disorders. The EDE was administered by a trained research assessor at all major assessment timepoints. For this study, LOC eating episodes were calculated by summing the number of objective bulimic episodes and subjective bulimic episodes reported in the previous month.

Demographic information.—Participants self-reported basic demographic information such as age, sex, race, and ethnicity at baseline.

Treatment

All participants received FBT for BN as manualized (Le Grange & Lock, 2009). FBT for BN in this treatment study was delivered over 18 sessions within six months and included three phases. In Phase I, parents are charged with the task of helping their adolescent re-establish eating patterns and discontinue compensatory behaviors. This often includes providing supervision and meal and snack times, ensuring the adolescent is eating enough and not restricting intake or skipping meals, and monitoring for the use of pre- or post-meal compensatory behaviors, such as purging, laxative use, or over-exercise. The specifics of how parents accomplish these tasks are left to each individual family to decide, with input from the adolescent as well as consultation from the FBT therapist. Phase II focuses on a gradual return of autonomy over eating and related behaviors back to the adolescent as well as promoting non-restrictive, non-compensatory eating across varied contexts and occasions, particularly social eating experiences. Phase III focuses on adolescent developmental challenges unrelated to the eating disorder. Key interventions include enhancing parental self-efficacy to manage eating disorder behaviors, including disrupting binge eating and purging behaviors, restricting, and helping the adolescent maintain a regular pattern of eating. The importance of parental alignment and externalization of eating disorder behaviors are also highlighted. The FBT therapist remains agnostic to the cause of BN and recommends that families act quickly to stop the behaviors that are maintaining the disorder. Throughout treatment, adolescents are encouraged to collaborate with parents in creating behavioral change and decreasing eating disorder behaviors. Study therapists received weekly supervision with FBT experts throughout the duration of the study.

Data Analytic Plan

Descriptive analyses were conducted. The number of LOC episodes at each time point are reported with means and standard deviations. Paired samples t-tests compared LOC eating episodes from baseline to EOT and follow-up time points. Effect size estimates were calculated (e.g., Cohen’s d) to assess differences in outcomes from pre- to post-treatment. Abstinence rates at EOT, 6-month, and 12-month timepoints were calculated based on the percentage of participants with zero reported LOC eating episodes in the month prior to assessment. Only individuals with EDE data are included in analyses; as such, we report the number of participants for each analysis to account for study dropout and thus unknown rates of LOC eating for these individuals. Analyses were conducted in SPSS version 28 with $p<.05$ set as significance level.

Results

Participants included 51 youth ages 12–18 years old (M + SD: 15.94 + 1.53 y; 92% female; 23.5% Hispanic; 76.5% Caucasian) randomized to FBT (Table 1). There were no site differences observed at baseline on demographic variables or LOC eating episodes. Further, there were no baseline differences observed among individuals who completed post-treatment assessments and follow-ups versus those that did not.

Participants reported an average of 25 (SD: 25.60; median: 17 episodes, range: 1–134 episodes) LOC eating episodes in the month prior to baseline. By EOT, LOC eating episodes

decreased to 4.07 LOC eating episodes (SD: 7.43; median: 0 episodes; range: 0–28 episodes; n=45; Figure 1). This difference from baseline to EOT was accompanied by a large effect size (t_{44}=5.79, p<.001; Cohen's d=0.86, CI: 0.52–1.20). At 6-month follow-up, participants reported on average more LOC eating episodes than at EOT, with 7.54 ± 16.84 episodes reported (median: 0 episodes; range: 0–84 episodes; n=35). This increase in episodes from EOT to 6-month follow-up was accompanied by a small effect size (t_{34}=−1.49, p>.05; Cohen's d=−0.26, CI= −0.60–0.09). By 12-month follow-up, the average number of LOC eating episodes in the previous month decreased to 6.7 ± 18.98 episodes (median: 0 episodes; range: 0–86 episodes; n=30). The decrease in LOC eating from pre-treatment to 12-month follow-up was accompanied by a medium effect size (t_{29}=2.91, p=.003; Cohen's d=0.53, CI: 0.14–0.91) whereas the decrease in average LOC eating episodes 6-month to 12-month LOC eating reflected a small effect size (t_{28}=0.39, p>.05; Cohen's d = 0.07, CI: −0.29–0.44). Follow-up completion rates for the 12-month follow-up timepoint were 59% (n=30). Additionally, significant variance in reported LOC eating episodes was noted at this time point (range: 0–86 episodes).

When examining abstinence rates (defined as no LOC eating in the previous month), almost half of the sample achieved abstinence (49% of total sample; 25/45 or 56% of participants with follow-up data) from LOC eating at EOT. At 6-month follow-up, LOC eating abstinence rates fell slightly (41.2% of total sample; 21/35 or 60% of participants with follow-up data). Of those completing a 12-month time point assessment, nearly three-quarters (73.3%; 22/30) reported abstinence from LOC eating in the month prior (Figure 2).

Discussion

The results of this secondary data analysis suggest that FBT reduces LOC eating episodes in adolescents with BN. FBT also resulted in abstinence from LOC eating over time, up to one-year post-treatment, though missing data and small sample size limits the conclusions that can be drawn from this study alone. The current study intends to highlight the potential utility in adapting FBT for LOC eating or BED in youth as well as the importance of further research, rather than suggest a definitive treatment recommendation based solely on the data presented in this secondary data analysis. In the foundation model of FBT, the aim is to involve the entire family in every treatment session, including parents and siblings and not just the young person impacted by the eating disorder. Thus, parents may be a significant source of support in disrupting LOC eating episodes, with sustained results in abstinence from LOC eating for up to one year after treatment ends. Additional research should be conducted to confirm and replicate these results in a unique sample as well as identify any specific treatment adaptations needed for patients with binge eating disorder or LOC eating without compensatory behaviors.

Given the rates of LOC eating among middle aged children (6–12 years old; Murray et al., 2022; Tanofsky-Kraff et al., 2020), developmental adaptations may be needed when utilizing FBT for LOC eating in this age range. Similar to FBT for Avoidant Restrictive Food Intake Disorder (FBT-ARFID; Lock, Robinson, et al., 2019) and pediatric overweight (Loeb et al., 2019), Phase III which focuses on adolescent development issues may not be a relevant treatment component to include for younger children. As such, additional

studies should test and refine adaptations to FBT to account for younger age. Moreover, shape and weight concerns may present differently in middle-age children compared to adolescents, which will need to be carefully thought through and incorporated. Further, younger children are more reliant on parents and guardians to provide food and control over the home environment; thus, additional focus on structuring the home environment and limiting restrictive parent feeding behaviors to reduce the likelihood of binge eating may be a more salient treatment target in this population. Youth with LOC eating are more likely to have parents who reported higher levels of restriction and pressure to eat feeding practices compared to parents of youth without LOC eating (Matheson et al., 2015). It is, however, unknown whether early treatment response is predictive of improved outcome in parallel to the findings for FBT in AN (Doyle et al., 2010; Lock & Le Grange, 2019) and BN (Le Grange et al., 2008; Matheson et al., 2020); this is yet another area that needs further study and exploration. Outcome metrics from both research trials and clinical work should strive to utilize assessment measures designed specifically for younger children, such as the child version of the Eating Disorder Examination (Bryant-Waugh et al., 1996) and Youth Eating Disorder Examination-Questionnaire (Goldschmidt et al., 2007), rather than measures normed against adolescent or adult data. Lastly, studies should investigate potential mechanisms of change, such as parental self-efficacy which is suggested to be a mechanism in FBT for AN (Robinson et al., 2013; Sadeh-Sharvit et al., 2018), to better understand how FBT promotes clinical symptom change in youth with LOC eating.

Strengths of this secondary study include therapy supervised by leading clinical experts in eating disorders and outcome data at multiple time points post-treatment. Participants and families did not pick the treatment but were randomly assigned to receive FBT. However, the study also has several limitations to consider, most notably that all participants in this study were diagnosed with BN as well as LOC. This limits the conclusions that can be drawn regarding the impact of treatment on LOC eating alone, as it may be possible that families respond with greater urgency or intensity when compensatory behaviors are present, though this has yet to be empirically tested. The study also had a large amount of missing data at follow-up assessment time points (greater than 40%) and thus it is unknown how these individuals did clinically over time. Although not statistically significant, the small increase in reported LOC episodes from end-of-treatment to follow-up time points should be further investigated to better understand clinically what may be occurring in the post-treatment time. It is unknown whether this is an isolated sample-specific finding or indicative of treatment persistence and durability. Additionally, the number of reported LOC eating episodes varied widely among participants. This additional variance in the spread of reported episodes creates further noise in interpreting outcomes of interest. In small samples, individual patient outcomes may skew findings much more prominently, masking treatment impact. Though there is often significant variance in the amount of LOC eating episodes reported by patients with BN and BED. Importantly, future research should also seek to include a more diverse sample of participants, such as greater numbers of racial/ethnically diverse patients and assigned male at birth patients to better understand the generalizability of treatments, such as FBT, for LOC eating. These results should also be replicated in naturalistic outpatient settings to future ensure generalizability of this treatment approach beyond research trials with strict inclusion criteria.

The current lack of well-established evidence-based treatments for youth with LOC eating (Datta et al., 2022) presents a clinical gap for patients needing care. A limited number of studies have examined different treatments for adolescents with BED, including CBT, interpersonal psychotherapy, and dialectical behavioral therapy, though outcome results are mixed; further, small sample size and restricted demographics (e.g., some studies only included female participants) limit generalizability (Datta et al., 2022; Marzilli et al., 2018). The results from this current study suggest that FBT for LOC eating may be an effective treatment for this population, though further investigation is needed. If effective, clinical providers could be trained in FBT with adaptations for specific symptom presentations, which would allow for dissemination and training in a transdiagnostic treatment approach for youth across the spectrum of disordered eating. Standardized training procedures already exist for FBT for AN and BN, which could then easily be adapted to include and incorporate training for FBT for LOC eating. Treatments that target LOC eating in youth are needed not only to resolve current distress around disordered eating patterns but also to prevent subsequent development of BN and/or BED.

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Data availability:

The data analyzed in this study are available from the authors upon request.

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Clinical Implications:

- Loss of control (LOC) eating is a common disordered eating behavior in youth.
- Family-based treatment (FBT) is efficacious for adolescent eating disorders.
- In this study, FBT reduced LOC eating among adolescents with bulimia nervosa.
- FBT may be effective for youth with LOC eating.
- Further research on developmental adaptations of FBT for LOC eating is needed.

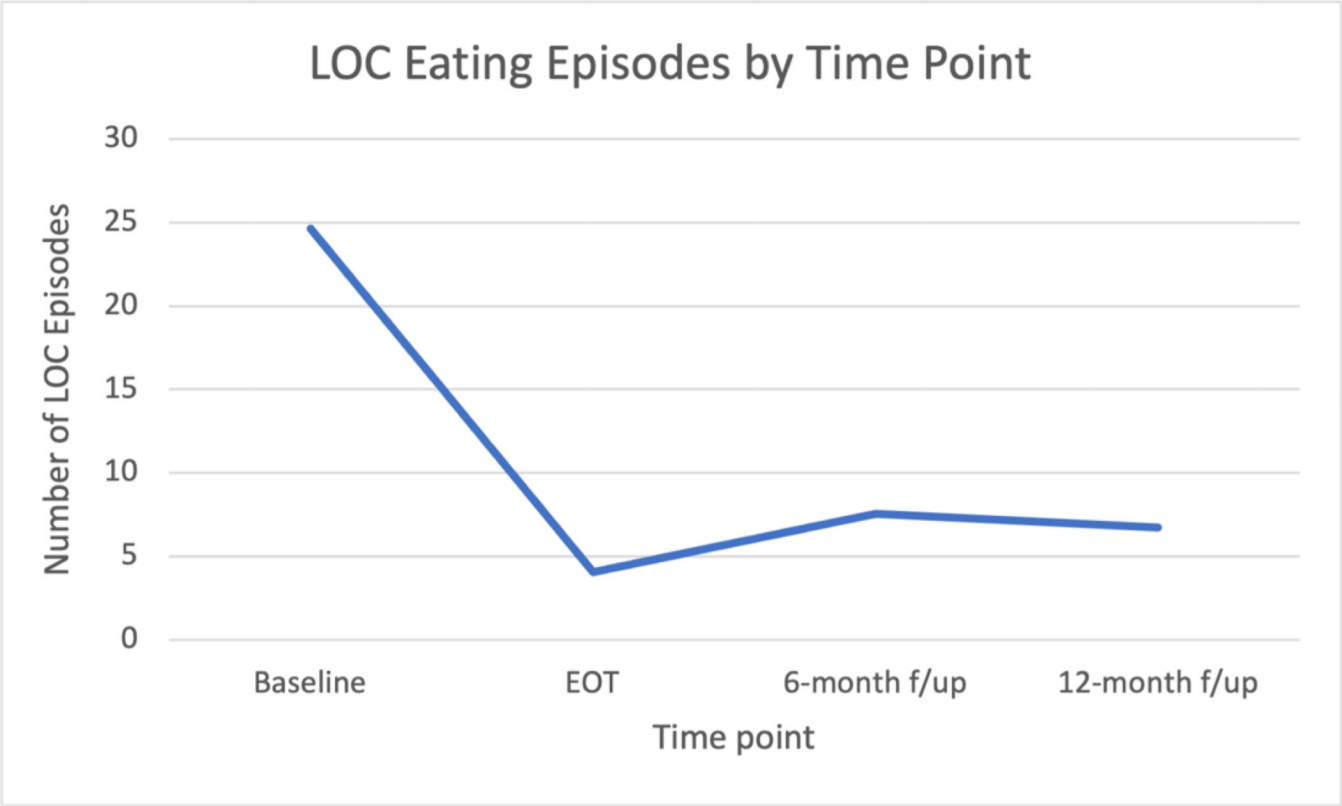

Figure 1.
Loss of control (LOC) eating episodes and abstinence rates
EOT = End of treatment; f/up = follow-up

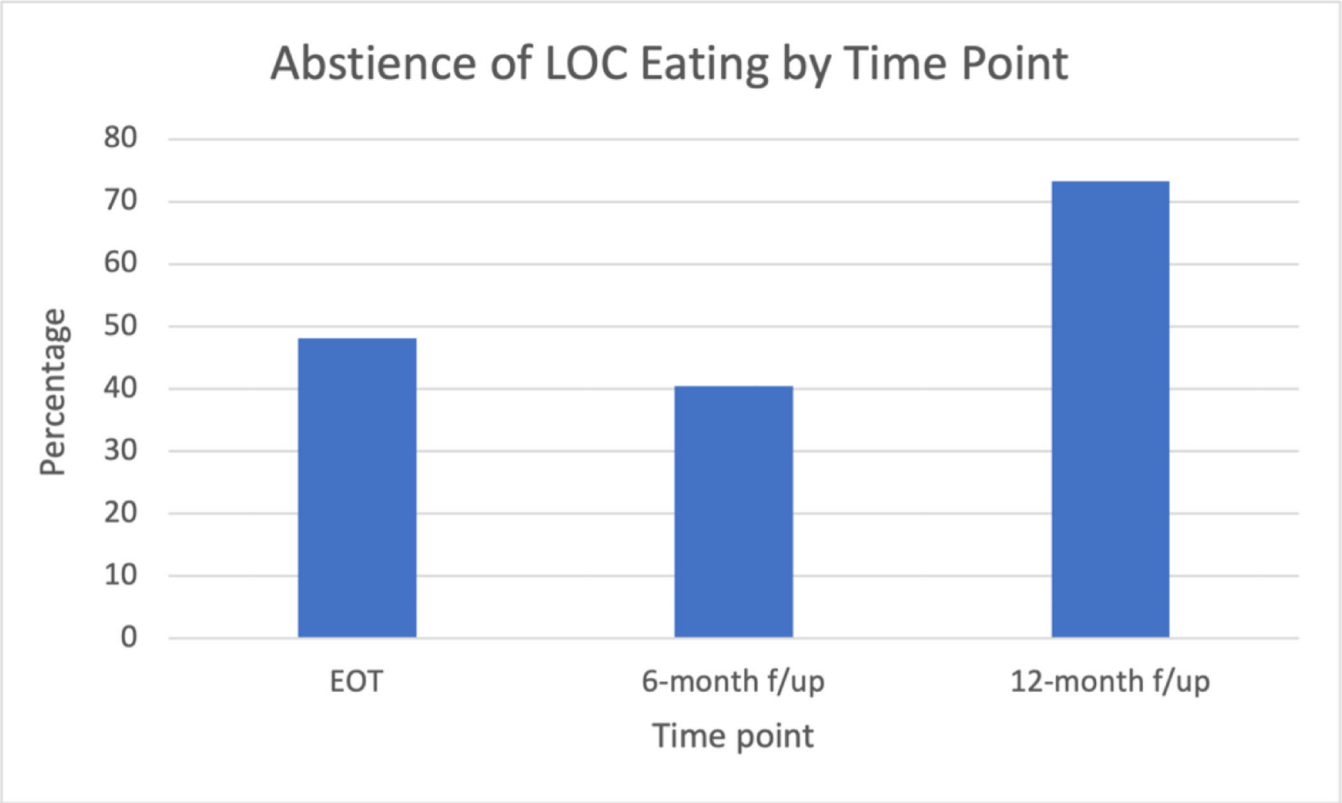

Figure 2.
Loss of control (LOC) eating abstinence rates by time point
EOT = end of treatment; f/up = follow-up

Table 1.

Sample demographics

	Stanford (n=26)	Chicago (n=25)	Total (n=51)
Age (y; M ± SD)	15.77 ± 1.56	16.12 ± 1.51	15.94 ± 1.53
Sex (n, % female)	24 (92.3%)	23 (92.0%)	47 (92.2%)
Ethnicity (n, % Hispanic)	7 (26.9%)	5 (20.0%)	12 (23.5%)
Race (n, %)			
Asian	1 (3.8%)	2 (8.0%)	3 (5.9%)
Black	1 (3.8%)	1 (4.0%)	2 (3.9%)
Caucasian	20 (76.9%)	19 (76.0%)	39 (76.5%)
More than one race	4 (15.4%)	3 (12.0%)	7 (13.7%)
LOC Eating Episodes at baseline	24.42 ± 22.94	25.60 ± 28.57	25.00 ± 25.60

LOC = loss of control