Supporting Information for: A Systematic Review of Binge Eating, Loss of Control Eating, and Weight Loss in Children and Adolescents

Authors: Afaf F. Moustafa[1], Kerry Quigley[2], Thomas A. Wadden, PhD[2], Robert I. Berkowitz, MD[2,3] & Ariana M. Chao, PhD, CRNP[2,4]

Affiliations: [1]New York Medical College, Valhalla, NY, US; [2]Perelman School of Medicine at the University of Pennsylvania, Department of Psychiatry, Philadelphia, PA, US; [3]The Children's Hospital of Philadelphia, Department of Child and Adolescent Psychiatry and Behavioral Science, Philadelphia, PA, USA; [4]University of Pennsylvania School of Nursing, Department of Biobehavioral Health Sciences, Philadelphia, PA, USA

Correspondence to: Ariana M. Chao, PhD, CRNP; University of Pennsylvania School of Nursing; 418 Curie Blvd, Philadelphia, PA 19104; email: arichao@upenn.edu; Phone: 215-746-7183; Fax: 215-898-2878

Table S1. Search Strategy

Search Engine	Weight Loss Outcome search string	Adolescent-related search string	BE/LOC-related search string	Additional Filters
PubMed	"weight change*" OR "weight gain" OR "weight loss" OR “Body Mass Index" OR "Body-Weight Trajectory" Body Mass Index” OR “weight gain” OR “Body-Weight Trajectory” OR “weight loss” OR “body weight changes”	"adolescen*" OR "teenage*" OR "youth" OR "pediatric".	"LOC" OR "loss of control" OR "binge eating” OR "Binge-Eating Disorder" "Binge-Eating Disorder” and ("Feeding Behavior"[Mesh] AND control).	Study type filter: clinical study, comparative study, multi-center study, observational study, twin study, validation study, clinical trial, systematic review. Language: English
PsycInfo	"weight change*" OR "weight gain" OR "weight loss" OR “Body Mass Index" OR "Body-Weight Trajectory"	"adolescen*" OR "teenage*" OR "youth" OR "pediatric".	"LOC" OR "loss of control" OR "binge eating” OR "Binge-Eating Disorder".	search terms within: all text, abstract, title, keywords Articles found in: peer-reviewed journals Language: English
Scopus	"weight change*" OR "weight gain" OR "weight loss" OR “Body Mass Index" OR "Body-Weight Trajectory"	"adolescen*" OR "teenage*" OR "youth" OR "pediatric".	"LOC" OR "loss of control" OR "binge eating” OR "Binge-Eating Disorder".	search terms within: all text, abstract, title, keywords Language: English

Table S2.1 Study Population Characteristics

First author, Pub year	Sample size	Sample Population	Sample Age: Mean (SD)	Gender, Race/ Ethnicity	Baseline BMI or other weight variable: Mean (SD)
Bishop-Gilyard et al. 2011	N= 82	13-17 year-olds with BMI of 32-44	14.1 (1.2)	67% Female, 33% Male; 42% African-American; 55% white	BMI: 37.9 (3.8)
Goossens et al. 2011	N= 108	8-18 year-olds, admitted to inpatient obesity treatment with BMI greater than 85th percentile	13.06 (1.99)	68% Female, 32% Male; no race/ethnic data	Adjusted BMI: 174.39% (21.52%); BMI: 31.90 (SD 4.43)
Goossens et al. 2009	N=132	8-18 year-olds, admitted to inpatient obesity treatment with BMI greater than 85th percentile	13.58 (2.15)	62% Female, 38% Male; no race/ethnic data	Adjusted BMI: 180.51% (25.60%) z-BMI: 2.24 (0.31)
Braet et al. 2004	N=122	7-17 year-olds, referred to inpatient treatment because of outpatient treatment failure	12.7 (2.3)	66% Female, 34% Male; 93% white, 3/5% African American, 3.5% Asian	BMI: 32.5 (5.3)
Braet et al. 2006	N=122	7-17 year-olds referred to inpatient treatment because of outpatient treatment failure	12.7 (2.3)	66% Female, 34% Male; 93% white, 3.5% African American, 3.5% Asian	Adjusted BMI: 179.5% (28.6%)
Braet et al. 2009	N=122	8-17 year-olds admitted to inpatient treatment between September 1996-September 1999	12.7 (2.3)	66% Female, 34% Male; 93% white, 7% ethnic minorities	Adjusted BMI: 179.5% (28.6%)
Van Vlierberghe et al. 2009	N=31	14-18 year-old overweight adolescents referred to inpatient obesity treatment after outpatient treatment failure, with, BMI >95th percentile	15.23 (1.23)	64.5% Female, 35.5% Male; no race/ethnicity data	Adjusted BMI: 180.9% (23.5%) z-BMI: 2.25 (0.28)
Jones et al. 2008	N=52	Public high school students with BMI above 85th percentile, with BE or overeating behavior 1+ times per week for previous 3 months	15.1 (SE 1.0)	Surgical group: 73% Female, 27% Male; 67.3% white, 3.8% Black, 23% Hispanic; 5.8% Other	BMI: SB2-BED group: 30.58 (4.9); WLC group: 30.64 (SD 5.97) z-BMI SB2-BED group: 1.81 (0.47); WLC group: 1.79 (0.51)
Balantekin et al. 2017	N=241	7-11 year-olds with BMI 85th percentile or greater, with at least 1 parent with a BMI of 25 or greater	9.93 (1.32)	62.7% Female, 37.3% Male; 90% Non-Hispanic/Latino, 10% Hispanic/Latino; 71% white, 16% Black, 13% other	z-BMI: 2.19 (0.38) all ppts; 2.17 (0.39) for ppts that completed study
Teder et al. 2013	N=26	8-12 year-olds with obesity (BMI > 30) and no medical diseases	10.9 (0.9)	46% Female, 54% Male; no race/ethnicity data	z-BMI: 3.3 (0.7)
Wildes et al. 2010	N=192	8-12 year-olds enrolled in RCT for treating severe pediatric obesity	10.2 (1.2)	56.8% Female, 43.2% Male; 73.4% white, 26.1% Black, 0.5% Asian	BMI: 99.2 percentile (0.7) 90.3% overweight (27.6) overweight (true BMI not included in data). BE group: 105.44% overweight (SD 37.74)

First author, Pub year	Sample size	Sample Population	Sample Age: Mean (SD)	Gender, Race/ Ethnicity	Baseline BMI or other weight variable: Mean (SD)
					non-BE group: 88.67% overweight (SD 25.24)
Levine et al. 2006	N=27	8-13 year-olds greater than 160% ideal body weight for their age, height, and gender	10.07 (1.60)	44% Female, 66% Male; 78% white; 22% Black	BMI: 33.5 (4.5), range 27.4-45.5
Albayrak et al. 2019	N=111	8-15 year-olds referred for weight reduction treatment with BMI 97th percentile or greater, or BMI 90th percentile or greater with risk factors	11.05 (no SD available)	49.5% Female, 50.5% Male; no race/ethnicity information	BMI: 29.42 (SD N/A), range 21.7-48.9 BMI z-score: 2.49 (SE 0.41)
Tanofsky-Kraff et al. 2014	N=113	12-17 year-old females with BMI between 75-97th percentile, and at least 1 LOC episode in past month	14.5 (1.7)	100% Female; 23.9% Black; 56.6% white; 8.8% Hispanic; 10.6% other	Total population: BMI 27.0 (SE 2.5), z-BMI 1.5 (SE 0.3) BMI: IPT (26.9, SE 2.6), HE (27.1, SE 2.4); z-BMI: IPT (1.5, SE 0.3) vs HE (1.5 SE 0.3)
Tanofsky-Kraff et al. 2017	N=68	12-17 year-old females with BMI between 75-97th percentile, and at least 1 LOC episode in past month (same population as Tanofsky-Kraff et al. 2014 study)	IPT: 14.18 (1.52) Control: 14.8 (1.73)	100% Female; 23.9% Black; 56.6% white; 8.8% Hispanic; 10.6% other	BMI: IPT (26.86, SD 2.61) vs HE (27.08, SD 2.43) z-BMI: IPT (1.55, SD 0.34) vs HE (1.52 SE 0.32)
Goldschmidt et al. 2018	N=234	13-19 year-olds undergoing bariatric surgery	17.1 (SE 1.6)	76% Female, 24% Male; 73% white, 22% African-American, 0.4% Asian; 4.7% multiracial; 92.7% non-Hispanic	BMI: 61 (SD N/A), range 39-88
Jarvholm et al. 2020	N=81	13-18 year-olds with BMI of 40+ or 35+ with comorbidity, who had failed conservative treatment (and control group matched for BMI, age, and sex)	16.5 (SE 1.2)	Surgical group: 65% Female, 35% Male; no race/ethnicity information	BMI: 45.5 (SE 6.1)
Jarvholm et al. 2018	N=82	13-18 year-olds with BMI of 40+ or 35+ w/ comorbidity who previously underwent failed comprehensive conservative treatment	16.9 (1.15)	67% Female; 33% Male; no race/ethnicity information	BMI: 45.4 (6.08)
Mackey et al. 2018	N=101	12-21 year-olds with BMI 35+ undergoing bariatric surgery	16.6 (1.8)	76.2% Female, 23.8% Male; 20.8% white. 16.8% Hispanic, 57.4% black	BMI: 50.3 (8.6), range 35-87
Sysko et al. 2013	N=101	14-17 year-olds with BMI 40+ or 35+ with comorbidities	15.8 (1.1)	72.3% Female, 27.7% Male; 34.7% white, 39.6% Hispanic/Latino; 20.8% African-American, 5% other race	BMI: 47.23 (SE 0.88)
Hunsacker et al. 2018	N=119	13-18 year-olds with BMI 40+	17.1 (1.3)	Surgery group: 79.5% female, 20.5% male; 65.4% white, 34.6% ethnic minorities	BMI: 51.6 (8.4)
Antunes et al. 2009	N=66	13-19 year-old Brazilian obese adolescents	Females: 16.56	62% Female; 38% Male; no race/ethnicity information	BMI: 35.62 (4.18)

First author, Pub year	Sample size	Sample Population	Sample Age: Mean (SD)	Gender, Race/ Ethnicity	Baseline BMI or other weight variable: Mean (SD)
			(1.99); Males: 16.20 (2.09)		
Carnier et al. 2010	N=37	15-19 year-old adolescents with BMI >30	N/A	54% Female, 46% Male; no race/ethnicity information	BMI: 36.08 (0.78)
Carnier et al. 2008	N=22	15-19 year-old adolescents with BMI >30	16.85 (1.96)	60% Female, 40% Male; no race/ethnicity information	BMI: 36.93 (4.41)
Damaso et al. 2013	N=97	15-19 year-old adolescents with BMI >30	N/A	58% Female, 42% Male; no race/ethnicity information	BMI: 37.0 (4.95)
Eichen et al. 2019	N=150	8-12 year-olds with BMI percentile between 85-99.9, and with a parent in a separate RCT for overweight or obesity	10.4 (1.3)	66.7% Female, 33.3% Male. 43% non-Hispanic white, 31% Hispanic, 24% non-Hispanic other race	BMI: 26.4 (3.6) z-BMI: 2.0 (0.34)
Shomaker et al. 2017	N=29	8-13 year-olds with overweight/obesity and reported LOC	IPT: 11.7 (1.6). HE: 11.0 (1.9)	IPT: 46.7% Female, 53.3% male; HE 78.6% Female and 21.4% Male IPT: 40.0% Hispanic, 33.3% Black, 20.0% white, 6.7% other HE: 7.1% Hispanic, 64.3% Black, 21.4% white, 7.1% other	BMI for IPT: 28.4 (3.4), range 23.2-32.3 BMI for HE: 27.2 (4.9), range 21.1-36.6
Tanofsky-Kraff et al. 2010	N=38	12-17 year-old females with BMI between 75-97th percentile	IPT: 14.7 (1.2) HE: 15.4 (0.2)	IPT: 42% Black, 37% white, 16% Asian, 5% Hispanic HE 53% Black, 37% white, 5% Asian, 5% Hispanic	BMI for IPT: 25.1 (2.8) BMI for HE: 25.6 (3.1)
Germann et al. 2006	N=150	Low-income children ages 8 and older with BMI 95% percentile and greater	12.90 (2.5)	49% Female, 51% Male; 88% African American, 6% Hispanic, 6% other	BMI: 43.61 (12.60) z-BMI: 6.03 (3.25)

Table S2.2 Measures and Interventions

First author, Pub year	Design and setting	Study Aim	Intervention	BE/LOC Measure Used	Outcomes Measured
Bishop-Gilyard et al. 2011	*Randomized Clinical Trial (RCT)* USA 12 months (no follow-up)	To examine relationship between BE and weight loss in adolescents with BMI of 95th or greater percentile	1) 16-week lifestyle modification program: weekly behavioral counseling, biweekly counseling for 8 more weeks; and parents attend separate group sessions 2) Sibutramine: half get placebo and half take 15 mg sibutramine for 6 months. All take sibutramine for final 6 months	QEWP (Questionnaire on Eating and Weight Patterns) Confirmatory interview to confirm that participants consumed objectively large amount of food and experienced LOC). Categorized with BED, subthreshold BE, or no symptoms -Self-report (Eating Inventory), 3 subscale measures	- prevalence of BE, BED, and subthreshold BE - BMI, z-BMI, weight, waist circumference
Goossens et al. 2011	*Longitudinal Cohort Study* *Belgium* *6 years post-treatment*	To determine the longitudinal stability of eating pathology in overweight youth following weight-loss treatment. To examine possible predictors for LOC onset	10-month inpatient obesity treatment	- Dutch translation of ChEDE to asses OBE, SBE, and LOC -EDI-II, a 64 item self-report questionnaire -ChEDE-Q self-report, 4 subscales	- adjusted BMI (adjusted for age and gender) - SBE, OBE, LOC
Goossens et al. 2009	*Longitudinal Cohort Study* *Belgium* *No F/U (10-month treatment)*	To examine eating pathology and early weight loss as predictors for treatment outcomes and drop-out rates of inpatient obesity treatment for children	10-month inpatient obesity treatment	- Dutch translation of ChEDE to asses OBE, SBE, and LOC - Self-report questionnaire (EDE-Q), 22 items, 4 subscales, and the Eating Disorder Inventory-2-NL, 64 items, 8 subscales	- adjusted BMI (adjusted for age and gender) - SBE, OBE, LOC
Braet et al. 2004	*Longitudinal Cohort Study* *Belgium* *14 months post-treatment*	To determine if an inpatient treatment program would help children maintain typical eating habits without developing any disordered eating	10-month inpatient treatment for obesity	Binges per month via self-report questionnaire -self-report questionnaire (EDI) -Eating Disorder Examination (EDE), structured clinical interview	- Binges/month - Adjusted BMI

First author, Pub year	Design and setting	Study Aim	Intervention	BE/LOC Measure Used	Outcomes Measured
Braet et al. 2006	*Longitudinal Cohort Study* *Belgium* *2 years post-treatment*	To examine which patient traits predict weight loss and mental health two years following completion of inpatient treatment for children with obesity	10-month inpatient treatment for obesity	Binges per month via self-report questionnaire -Eating Disorder Examination (EDE), structured clinical interview with four subscales and additional questions	- Binges/month - Adjusted BMI
Braet et al. 2009	*Longitudinal Cohort Study* *Belgium* *2 years post-treatment*	To determine whether patients with different subtypes of eating psychopathology differ on psychosocial adjustment and disordered eating, with the expectation that dietary restraint/internalizing subtypes would be more severe than dietary restraint or pure internalizing or non-symptomatic groups	10-month inpatient treatment for obesity	Binges per month via self-report questionnaire -EDI self-report questionnaire with 3 subscales -EDE structured clinical interview with 4 subscales -Dutch Eating Behavior Questionnaire self-report	- Binges/month - Adjusted BMI
Van Vlierberghe et al. 2009	*Longitudinal Cohort Study* *USA* *No Follow-up (10-month treatment)*	To determine whether psychological disorders and symptom severity are related to weight loss, and how both psychological disorders and symptom severity may evolve during the course of treatment for overweight adolescents	10-month inpatient treatment for obesity	ChEDE via structured clinical **interviews** to assess BE episodes in past 3 months and BED -self-report and structured clinical interview (ChEDE)	- BE episodes in past 3 months - BED - BMI - Mean % weight loss
Jones et al. 2008	*RCT* *USA* *9 months (5-month F/U, 4-month treatment)*	To determine the effects of an internet-facilitated program on reducing BE and overeating and preventing weight gain in students at risk of being overweight.	CBT (for BE and weight loss) via Internet for 16-weeks	Eating Behaviors Inventory (EBI) measuring OBE, SBE, OOE (objective over-eating episode) -EBI structured clinical interview	z-BMI OBEs SBEs OOEs
Balantekin et al. 2017	*RCT* *USA* *No F/U, 4-month treatment*	To examine whether children with distinct patterns of ED pathology differ in z-BMI change across family-based therapy	Family-based therapy, 16 sessions	ChEDE as a semi-structured **interview** to assess LOC by asking if patient has had a LOC episode in the past 3 months ChEDE and YEDE-Q, a 39-item child version of the adult EDE-Q, structured clinical interview	# of LOC eating episodes in past month z-BMI

First author, Pub year	Design and setting	Study Aim	Intervention	BE/LOC Measure Used	Outcomes Measured
Teder et al. 2013	*Longitudinal cohort study* *Sweden* *3 years (1-year F/U, 2-year treatment)*	To examine lifestyle habits of obese children during family-based program, and the correlations to change in z-BMI from baseline to follow-up	Family-based behavioral intervention programs for 2-years	1 self-report question: "Do you sometimes eat a lot of food?' (yes/no)" -self-report, 1 question	z-BMI Y/N to question "do you sometimes eat a lot of food"
Wildes et al. 2010	*RCT* *USA* *18 months (1-year F/U, 6-month treatment)*	To determine prevalence and correlates of self-reported BE in severely obese children To examine if self-reported BE diminishes impact of family-based weight loss intervention at end of treatment and follow-ups	Family-based behavioral intervention, 6 months (control: "usual care")	ChEAT (Children's Eating Attitudes Test; 26 question self-report questionnaire), includes the question: "I have gone on eating binges where I feel that I might not be able to stop", coded as symptomatic if answered w/ often, very often, or always; non-symptomatic/no BE if answered sometimes or rarely (based on established ChEAT scoring guidelines) -BED first assessed using a single item from a self-report questionnaire, no interview	BMI
Levine et al. 2006	*Longitudinal cohort study* *USA* *3 years (1-year F/U, 2-year treatment)*	To examine binge eating among severely overweight children seeking treatment, and observe the relationship between their eating behaviors and weight loss outcomes	Family-based behavioral intervention (10-12 sessions)	ChEDE -interviewed using the ChEDE, structured clinical interview	SBEs BMI Weight change
Albayrak et al. 2019	*Longitudinal cohort study* *Germany* *No F/U, 12-month treatment*	To determine whether baseline eating behavior can predict weight change in children and adolescents at follow-up of lifestyle intervention	3-months of behavioral therapy, dietary training, parents' course, physical exercise course), and 9-months of physical education once a week and parent group once a month	EDI-2: bulimia scale -EPI-C, self-report questionnaire	z-BMI
Tanofsky-Kraff et al. 2014	*Parallel RCT* *USA* *12 months (9-month F/U, 3-month treatment)*	To test the feasibility of an adapted prevention version of IPT for the reduction of LOC eating and excess weight gain in adolescent girls	Interpersonal therapy or control (health education), 12 weeks of 90 minute group sessions	LOC episodes BE episodes Presence of BE -Eating Disorder Examination interview, semi-structured clinical interview	BMI z-BMI BMI percentile Percent body fat

First author, Pub year	Design and setting	Study Aim	Intervention	BE/LOC Measure Used	Outcomes Measured
Tanofsky-Kraff et al. 2017	*Parallel RCT* *USA* *3 years (2-year F/U, 9-month treatment)*	To determine differences that emerge in follow-up of participants who were randomized to interpersonal therapy versus health education	Interpersonal therapy or control (health education), 12 weeks of 90 minute group sessions	LOC episodes -Eating Disorder Examination interview, semi-structured clinical interview -also self-reported LOC eating episodes	BMI z-BMI BMI percentile Percent body fat
Goldschmidt et al. 2018	*Longitudinal cohort study* *USA* *4 years (4-year F/U post-surgery)*	To analyze course of LOC prior to surgery until 4-year follow-up among adolescents with severe obesity	Bariatric surgery: 159 Roux-en-Y gastric bypass; 63 vertical sleeve gastrectomy; 12 laparoscopic adjustable gastric band	Questionnaire on Eating and Weight Patterns-Revised (QEWP-R) to measure LOC-OBE, LOC-C (objective binge eating vs. continuous LOC eating), and presence of LOC eating in past 6 months -self-reported questionnaire, 2 items	LOC-OBE LOC-C (continuous LOC) BMI change
Jarvholm et al. 2020	*Non-randomized matched case-control study* *Sweden* *5 years (5-year F/U post-surgery)*	To compare mental health outcomes throughout 5-year follow-up after gastric bypass to a control group with severe obesity (matched for age, sex, and BMI) To explore associations between self-reported mental health and eating-related problems and weight loss at 5-year follow-up after gastric bypass	laparoscopic Roux-en-Y gastric bypass	Binge Eating Scale (BES) score, with range 0 - 46 where 18 or greater is considered BE -self-reported questionnaires like Binge Eating Scale (16 items) and Three-Factor Eating Questionnaire	BES BMI
Jarvholm et al. 2018	*Longitudinal cohort study* *Sweden* *2 years (2-year F/U post-surgery)*	To assess BE in adolescents undergoing gastric bypass and analyze change from baseline to 2-year follow-up To analyze whether adolescents experience similar improvements as adults following gastric bypass To explore how BE prior to surgery is associated with other aspects of mental health before and after surgery To analyze how BE before and after surgery was related to weight loss outcomes	laparoscopic Roux-en-Y gastric bypass	Binge Eating Scale (BES) score, with range 0 - 46 where 18 or greater is considered BE -self-report questionnaires (BES), 16 items, and Three-factor eating (TFEQ-R21), 21 items	BES BMI
Mackey et al. 2018	*Longitudinal cohort study* *USA* *12 months (12-month F/U post-surgery)*	To examine the role of adolescent-reported social support, exercise, and pre-operative binge eating and excess BMI loss from 3 to 12 months post-sleeve gastrectomy	Sleeve gastrectomy	Eating Disorder Diagnostic Scale (EDDS): 3 items on experiences of LOC eating, frequency of days BE per month across last 6 months and days BE per week across last 3 months -EDDS—3 items, self-reported	LOC eating Days BE/month Times BE/week Excess BMI % loss

First author, Pub year	Design and setting	Study Aim	Intervention	BE/LOC Measure Used	Outcomes Measured
Sysko et al. 2013	*Longitudinal cohort study* *USA* *15 months (15-month F/U post-surgery)*	To examine relationship between change in quality of life, weight, and psychiatric symptoms in adolescents following bariatric surgery To evaluate pre-surgical psychological predictors of weight loss outcomes during first year following surgery	laparoscopic adjustable gastric banding (LAGB)	EDE-Q measuring SBE, OBE QEWP-R - abbreviated version of EDE-Q self-reported, but adolescents also met with a psychologist or psychiatrist for clinical interview, although it is unsure whether BE/LOC was addressed in this interview	BMI SBE OBE
Hunsacker et al. 2018	*Prospective controlled observational cohort study* *USA* *24 months (24-month F/U post-surgery)*	To characterize types of psychopathology at 24-months post-surgery in adolescents who underwent bariatric surgery and examine changes in symptomatic status from prior to surgery	Bariatric surgery: 64.6% gastric bypass, 33.1% sleeve gastrectomy, 2.4% adjustable band	QEWP-R, 2 questions on LOC: "LOC criteria required “yes” responses to the following: “During the past 6 months, have you had times when you eat continuously throughout the day or parts of the day without planning what or how much you would eat?” and the follow-up “Did you experience a loss of control, that is, you felt like you could not control your eating?”" -2 self-report items from the Questionnaire of Eating Patterns-Revised	BMI Percent weight change
Antunes et al. 2009	*Longitudinal cohort study* *Brazil* *No F/U – 24-week treatment*	To analyze effects of long-term, multidisciplinary lifestyle therapy on quality of life, body image, anxiety, depression, and binge eating in obese adolescents	24-week multi-disciplinary lifestyle therapy	BES (translated into Portuguese and validated for Brazilian population): range of (0-46 with <17 = non-binger, 18-26=moderate, and 27+=severe binger) -translated 16-item self-reported Binge Eating Scale questionnaire	BES score BMI
Carnier et al. 2010	*Longitudinal cohort study* *Brazil* *No F/U – 1-year treatment*	To analyze the role of orexigenic and anorexigenic factors in interdisciplinary weight loss therapy for obese adolescents who have eating disorder symptoms	1-year weight loss intervention	BES (translated into Portuguese and validated for Brazilian population): range of (0-46 with <17 = non-binger, 18-26=moderate, and 27+=severe binger) -Binge eating scale (16-item self-report) -Bulimic Inventory Test, Edinburgh (33-item self-report)	BES score BMI
Carnier et al. 2008	*Longitudinal cohort study* *Brazil* *No F/U – 5-month treatment*	To analyze the effects of multidisciplinary short-term therapy on BED symptoms, ghrelin concentration, leptin concentrations, Bulimia nervosa symptoms, and body composition, in obese adolescents	6-month multidisciplinary short-term therapy	BES (translated into Portuguese and validated for Brazilian population): range of (0-46 with <17 = non-binger, 18-26=moderate, and 27+=severe binger) - Binge eating scale (16-item self-report) -Bulimic Inventory Test, Edinburgh (33-item self-report)	BES score BMI

First author, Pub year	Design and setting	Study Aim	Intervention	BE/LOC Measure Used	Outcomes Measured
Damaso et al. 2013	*Longitudinal cohort study* *Brazil* *No F/U – 1-year treatment*	To analyze the effects of a 1-year interdisciplinary therapy on the control of obesity and related co-morbidities on obese adolescents	1-year interdisciplinary therapy (clinical, nutritional, PE, psychological)	BES (translated into Portuguese and validated for Brazilian population): range of (0-46 with <17 = non-binger, 18-26=moderate, and 27+=severe binger) -- Binge eating scale (16-item self-report) -Bulimic Inventory Test, Edinburgh (33-item self-report)	BE prevalence BMI
Eichen et al. 2019	*RCT* *USA* *24 months (18-month F/U, 6-month treatment)*	To evaluate the change in eating disorder symptoms during family-based behavioral treatment and during an 18-month follow-up	Family based behavioral treatment (FBT) or control (PBT: Parent-only variant of FBT)	ChEDE: Total LOC eating over past 3 months, measured via OBE and SBE -structured clinical interview using ChEDE and the YEDEQ	LOC eating BMI
Shomaker et al. 2017	*RCT* *USA* *15 months (1-year F/U, 12-week treatment)*	To determine effects of family-based interpersonal therapy on children's disordered eating, BMI, social functioning, and depressive/anxiety symptoms, compared to family-based health education (control)	Family-based Interpersonal Therapy or Control (Family-based Health Education)	LOC episodes in past month (via interview assessment) -structured clinical interview using ChEDE	LOC eating BMI
Tanofsky-Kraff et al. 2010	*Parallel RCT* *USA* *12 months (9-month F/U, 3-month treatment)*	To pilot an interpersonal therapy program aimed at preventing excess weight gain in adolescent females, and determine the program's acceptability and feasibility	Interpersonal therapy or control (health education), 12 weeks of 90 minute group sessions	EDE: presence of LOC in month prior to assessment -structured clinical interview using ChEDE -structured clinical interview, Standard Pediatric Eating Episode Interview (SPEEI) was administered	BMI z-BMI BMI percentile Percent body fat
Germann et al. 2006	*Non-randomized non-matched case-control study* *USA* *23 months (average 11-month F/U, 1-year treatment)*	To evaluate the effects of an interdisciplinary, intensive program for morbid obesity among low-income minority adolescents throughout a long-term follow-up period	1-year interdisciplinary therapy: clinical, nutritional, PE, psychological	BES -binge eating scale, 9 items, self-report	BES z-BMI

Table S2.3 Results

First author, Pub year	Baseline BE/LOC	FU BE/LOC	Baseline BMI or other weight variable: Mean (SD)	Weight Loss	Main Findings
Bishop-Gilyard et al., 2011	24% had BE symptoms 16% met BED criteria 8.5% sub-threshold BED 76% no BE symptoms	Month 6: 8% Month 12: 3%	BMI: 37.9 (3.8)	At month 12: BE group lost 8.8% BMI (SD 2.4), BMI change of -2.8 (SD 0.6), z-BMI change of -0.18 (SD 0.05), and weight change of -5.3 kg (SD 1.5) Non-BE group lost 8.3% BMI (SD 1.3), BMI change of -3.1 (SD 0.5), z-BMI change of -0.30 (SD 0.05), and weight change of -6.4 kg (SD 1.4)	No significant differences in percentage reduction in initial BMI between participants with or without BE at months 6 (−7.0 ± 1.6% vs. −6.9 ± 0.9%) or 12 (−8.8 ± 2.4% vs. −8.3% ± 1.3). The prevalence of BE decreased significantly from 24% at baseline to 8% at month 6 to 3% at month 12 (p=0.003).
Goossens et al. 2011	30.4% LOC prevalence, 16.1% SBE only SBEs per subject: 4.5 (SD 5.03) OBE only: 14.3% OBEs per subject: 9.1 (SD 6.24) No ppts fit BED criteria or had combined SBE/OBE	21.4% LOC prevalence, 7.1% SBE only, SBEs per subject: 2.8 (SD 2.17) OBE only: 12.5% OBEs per subject: 14.75 (SD 13.95) 5.4% fit BED criteria and 1.8% had combined SBE/OBE	Adjusted BMI: 174.39% (21.52%); BMI: 31.90 (SD 4.43)	Adjusted BMI: 153.01% (SD 24.50%) BMI of 31.54 (SD 4.80)	At 6-year FU, OBE remained stable, while SBE decreased. Of all participants who reported OBE at baseline, 50% still reported OBE at FU. Of all participants who reported SBE at baseline, only 11% still reported SBE at FU. This decrease in SBE may be due to participants learning what is considered an appropriate amount of food. This difference between OBE and SBE questions whether SBE is beneficial in predicting EDs and suggests that subjects who report large amounts of food along with LOC would need long-term follow-up.
Goossens et al. 2009	71.4% reported LOC	N/A (only measured at baseline)	Adjusted BMI: 180.51% (25.60%) z-BMI: 2.24 (0.31)	Adjusted BMI: 130.31% (SD 17.48%) Total weight loss: 28.88 (SD 7.11)	Binge eating was not related to weight loss (consistent with Levine et al. 2006). Presence of SBE decreased the risk of drop-out. 71.4% of participants reported LOC. This unexpected finding may be explained by the fact that this treatment succeeds in aiding youngsters who want to get minimize their BE episodes.

First author, Pub year	Baseline BE/LOC	FU BE/LOC	Baseline BMI or other weight variable: Mean (SD)	Weight Loss	Main Findings
Braet et al. 2004	9.8 (SD 16.1) 56% reported at least 1 binge per month	1.0 (SD 3.5) at end of treatment; 0.7 (SD 2.5) at 14-month FU	BMI: 32.5 (5.3)	BMI at EOT 23.6 (SD 3.9) and at 14-month FU 27.3 (SD 4.7)	Total number of binges per month reduced significantly, with the number of participants reporting at least 1 binge per month dropping from 56% at baseline to 19% at FU. Number of participants who met BED criteria dropped from 32% to 5% at post-test to 1% at FU.
Braet et al. 2006	Binges per month: 10.33 (SD 16.40)	Post-treatment: 1.0 (SD 3.11); At 2-year F/U: 0.44 (SD 1.25)	Adjusted BMI: 179.5% (28.6%)	Adjusted BMI: post-treatment: 130.31% (SD 18.33%); at 2-year F/U: 150.58 (SD 30.15%)	77.3% of children successfully reduced their adjusted BMI by at least 10% at 2-year F/U. Significant improvements of global self-worth and reduction of psychopathology and symptoms of eating disorders present at F/U. 24% of children continued to lose relative weight after treatment, while all others showed weight increase.
Braet et al. 2009	56% reported binges, 3% had BN, 1% had BED (according to APA, 2000)	N/A (only measured at baseline)	Adjusted BMI: 179.5% (28.6%)	Decrease in adjusted BMI: 25% (DR/IN group), -19.1% (IN group), 16.7% (NS group)	Decrease in adjusted BMI from baseline to 2-year FU was stronger in the DR/IN group (-25.0%) The IN and NS had no significant difference in reductions at FU of -19.1% and -16.7%.
Van Vlierberghe et al. 2009	16.7% fit BED criteria, prevalence of BE was 30.3%. Mean number of reported BE episodes during past 3 months was 5.80 (SD 15.64, range 0-90)	0% had BED criteria, 12.9% reported subclinical binge eating	Adjusted BMI: 180.9% (23.5%) z-BMI: 2.25 (0.28)	Mean percent weight loss at EOT: 52.5% (SD 18.2, range 18.2-107.4) Mean adjusted BMI: 128.4% (SD 13.9, range 104.5-177.2)	Psychopathology was not significantly predictive of weight loss There was a significant decrease in the number of reported binges following treatment
Jones et al. 2008	SB2-BED group: 15.16 (SD 20.78) OBEs and SBEs; 7.89 (SD 14.28) OOEs; WLC: 6.98 (SD 17.55) OBEs and SBEs; 7.53 (SD 14.28) OOEs	SB2-BED group: OBEs/SBEs 2.29 (SD 7.67); OOEs 2.16 (SD 9.33) WLC group: OBEs/SBEs: 8.42 (SD 18.74); OOEs: 1.07 (SD 2.80)	BMI: SB2-BED group: 30.58 (4.9); WLC group: 30.64 (SD 5.97) z-BMI SB2-BED group: 1.81 (0.47); WLC group: 1.79 (0.51)	End BMI: SB2-BED group: 29.76 (SD 5.34); WLC group: 31.17 (SD 6.33) z-BMI: SB2-BED group: 1.60 (SD 0.62); WLC group: 1.76 (SD 0.57)	No relationship between change in BE and change in z-BMI, consistent with other studies that demonstrated that similar amounts of weight were lost by individuals with and without BE. SB2-BED participants who reported BE or OE at baseline experienced significantly greater reductions in z-BMI than WLC subjects. This suggests that combined interventions for both BE and weight maintenance is most effective in preventing weight gain among participants with a history of BE and OE, and the effect of this intervention may be related to changes in BE.

First author, Pub year	Baseline BE/LOC	FU BE/LOC	Baseline BMI or other weight variable: Mean (SD)	Weight Loss	Main Findings
Balantekin et al. 2017	34% reported LOC average LOC episodes in last month: 1.40 (SE=3.82) for all ppts and 1.28 (SE=3.68) for all participants that completed the study	LOC episodes in previous month at FU: 0.57 (SE=1.76)	z-BMI: 2.19 (0.38) all participants; 2.17 (0.39) for participants that completed study	end z-BMI: 1.89 (SE= 0.55)	No significant change in number of LOC episodes over past month for entire sample
Teder et al. 2013	50% self-reported BE; 57.7% of parents reported that child displayed BE	11.5% self-reported BE; 15.4% of parents reported that child displayed BE	z-BMI: 3.3 (0.7)	N/A - direct weight/BMI changes were not reported, just the association between z-BMI change and reported BE	No statistically significant correlations exist between changes in reports of behavior and changes in z-BMI at follow-up. P-values of z-BMI change over 36 months were 0.52 (of child self-reporting BE) and 0.63 (or parent's report of child's BE)
Wildes et al. 2010	11.5% self-reported BE	N/A (only measured at baseline)	BMI: 99.2 percentile (0.7) 90.3% overweight (27.6) overweight (true BMI not included in data). BE group: 105.44% overweight (SD 37.74) non-BE group: 88.67% overweight (SD 25.24)	Change in % overweight at 18 months: BE groups: intervention group 2.43 (SD 5.88); control group -0.09 (SD 2.89) Non-BE groups: intervention group -1.46 (SD 1.73); control group -0.15 (SD 1.25)	At baseline, 11.5% of children were symptomatic for binge eating. Intervention did not significantly affect weight change for BE group. Intervention did affect short-term change in percent overweight in the non-BE group, but only at the 6-month mark, and not at 12 and 18 months. Study results show initial evidence that self-reported BE at start of treatment is associated with a poor short-term response to behavioral weight control in severely obese adolescents, contradicting previous findings with smaller samples (Levine et al. 2006 and Goossens et al. 2009).
Levine et al. 2006	14.8% reported SBE, 7.4% reported OOE, 51.8% reported SOE, 59% reported SOE and/or OOE at least once in past month	N/A (only measured at baseline)	BMI: 33.5 (4.5), range 27.4-45.5	N/A - direct weight/BMI changes were not reported, just the association between amount of weight lost and reporting of SBE	Children reporting SBEs as baseline did not differ from children who did not report SBEs in the amount of weight lost post-treatment. The sample size is small and results are preliminary, but LOC overeating was not associated with weight loss. LOC overeating may be relatively common in children who seek weight control, but potentially does not have an adverse effect on treatment outcome.

First author, Pub year	Baseline BE/LOC	FU BE/LOC	Baseline BMI or other weight variable: Mean (SD)	Weight Loss	Main Findings
Albayrak et al. 2019	Bulimia scale via EDI-2: 10.20 (SD 4.46)	N/A (only measured at baseline)	BMI: 29.42 (SD N/A), range 21.7-48.9 BMI z-score: 2.49 (SE 0.41)	BMI: 27.91 (SD 3.81) z-BMI: 2.18 (SD 0.51)	BE was not significantly associated with change in z-BMI, but there was some association between BE and z-BMI reduction (p=0.053), indicating that higher levels of BE are associated with lower BMI z-score reduction. BE did not predict treatment outcome.
Tanofsky-Kraff et al. 2014	LOC episodes: 6.2%; IPT group 4.7 vs HE group 8.0 Binge episodes: 0.6; IPT group 0.4 vs. HE group 0.8 Binge presence: 31.9%; IPT group 25.5% vs. HE group 37.9%	Frequent LOC: IPT 1.8% vs HE 10.3% BE episodes: IPT group 0.04 (0.0-0.09) vs HE group 0.16 (SE: 0.14-0.23) At 12-month FU, frequent BE: IPT 0% vs. 3.4% HE	Total population: BMI 27.0 (SE 2.5), z-BMI 1.5 (SE 0.3) BMI: IPT (26.9, SE 2.6), HE (27.1, SE 2.4); z-BMI: IPT (1.5, SE 0.3) vs HE (1.5 SE 0.3)	N/A - direct weight/BMI changes were not reported, just the association between BMI change and LOC-eating and BE	Reductions in LOC did not predict changes in BMI index or adiposity. Girls in HE were 0.7 times more likely to endorse BE at 12 months than girls who took part in IPT (when accounting for post-treatment BE status), with OR = 7.32, p = 0.01. Girls who reported BE at 12-weeks post-intervention follow-up were 19 times more likely to report BE one year later with OR 19.25 (p < 0.001). 3.4% of girls in HE reported frequent BE at 12-month F/U (defined as 1x/week for 3 months) whereas 0% of girls in IPT reported the same. Group did not predict BE frequency status at 12 months with baseline BE status accounted for, but this is likely because the number of girls with frequent BE at F/U was so small.
Tanofsky-Kraff et al. 2017	LOC- episodes per month: IPT group: 2.55 (range: 0.91-5.61) HE group: 3.79 (range: 1.34-8.77)	LOC-episodes per month: IPT group: 0.58 (range: -0.13-1.88) HE group: 0.41 (range: -0.24-1.63)	BMI: IPT (26.86, SD 2.61) vs HE (27.08, SD 2.43) z-BMI: IPT (1.55, SD 0.34) vs HE (1.52 SE 0.32)	end BMI: IPT (mean 27.78, SD 3.90) vs HE (mean 28.89, SD 4.24); end z-BMI: IPT (mean 1.32, SD 0.53) vs HE (mean 1.40, SE 0.50)	LOC episodes did not moderate effect of group on z-BMI or adiposity change over time (p=0.68). There was no indication that baseline LOC frequency moderated intervention. Severity of LOC as a moderator for intervention effects were limited because almost all girls reported some LOC at baseline but very few reported meeting criteria for BED.
Goldschmidt et al. 2018	10.7% reported both LOC-OBE and LOC-C at presurgical assessment, 15.4% reported LOC-OBE, 27.8% reported LOC-C	10.3% reported LOC-C, 3.8% reported LOC-OBE at 4-year FU	BMI: 61 (SD N/A), range 39-88	BMI change: -25.3% (SD 14.8) (at 4 year FU)	10.7% of participants reported both LOC-OBE and LOC-C pre-operatively. This decreased to 0.5% at 6 months, then to 2.1% at 4-year F/U. LOC-OBE was reported by 36 participants pre-operatively, but only 4 reported it at any follow-up visit. Of the 198 subjects who did not report LOC-OBE pre-operatively, 9 reported it at one or more follow-up. LOC-C was reported by 65 participants pre-operatively, and 25 reported it at one or more follow-up. Of the 169 subjects that reported no LOC-C pre-operatively, 37 reported LOC-C during at least one follow-up. Both LOC-OBE and LOC-C were significantly lower at all 5 FUs relative to baseline, but rates of both behaviors gradually increased from 6 month to 4-year FU. There was no evidence of significant effect of presurgical LOC on BMI change over all 4 years. However, the group reporting LOC

First author, Pub year	Baseline BE/LOC	FU BE/LOC	Baseline BMI or other weight variable: Mean (SD)	Weight Loss	Main Findings
					during 3 or more post-surgical time points consistently showed the smallest percent change in BMI since baseline. groups that reported post-surgical LOC eating There were dramatic decreases in LOC prevalence in the period immediately following surgery, but this gradually increased over 4-years follow-up. Presence of LOC post-operatively may be associated with poorer weight outcomes.
Jarvholm et al. 2020	15.0 (95% CI 13.5-16.5)	9.3 (95% CI 7.4-11.2)	BMI: 45.5 (SE 6.1)	BMI at 5 year FU: 32.3 (SD 6.3) Mean BMI change: -13.2	BE and LOC eating were moderately improved after 5 years post-operative.28% of adolescents reported BE only before, but not after surgery, whereas only 4% reported onset of BE after surgery. Relative BMI changes over all 5 years weren't statistically significantly associated with pre-operative BE. Higher scores for BE at 2 and 5 years and LOC at 2 years were significantly associated with smaller percentage decrease in BMI at 5 years relative to baseline. No significant difference was found in percentage change in BMI after 5 years between patients who reported BE at any follow-up versus participants who never reported BE at a follow-up ($p = 0.0568$).
Jarvholm et al. 2018	15.0 (95% CI 13.4-16.5)	8.1 (95% CI 6.4-9.7) at 2-year FU; Change from baseline: -6.9 (95% CI -9.9 to -4.0)	BMI: 45.4 (6.08)	BMI: 30.0 (95% CI 29.0-31.0) Change in BMI from baseline: -15.5 (95% CI -17.0 to -13.9)	There was no significant association between percentage BMI lost at 2 years post-operative and BE at baseline or BE at 1-year F/U. BE was reported by 37% of adolescents pre-operatively, 5% 1-year post-op, and 10% 2-years post-op. 15% of adolescents with BES-data at baseline and 2-year follow-up reported more BE 2 years post-op compared to baseline. Self-reported BE was substantially decreased in adolescents 2-years post-gastric bypass. There were weakly significant associations between reporting more BE and LOC 2-years post-operatively and a decreased percentage BMI loss at 2-years post-op.
Mackey et al. 2018	23.5% reported LOC eating Days BE per month: 1.1 (SD 1.4; range 0-5) Times BE per week: 1.0 (SD 1.4; range 0-7)	N/A (only measured at baseline)	BMI: 50.3 (8.6), range 35-87	EBMI % loss at 12 months: 55.3 (SD 21.8; range: -1-90)	BE was associated with lower excess BMI loss ($p<0.05$). Baseline BE is associated with significantly less weight loss up to 12 months following surgery.

First author, Pub year	Baseline BE/LOC	FU BE/LOC	Baseline BMI or other weight variable: Mean (SD)	Weight Loss	Main Findings
Sysko et al. 2013	N/A - LOC responses were not reported, only the association between weight/BMI change and LOC	N/A (only measured at baseline)	BMI: 47.23 (SE 0.88)	BMI: 42.57 (SE 1.87)	Those who reported LOC had significantly higher BMIs at time of surgery (mean BMI difference of 0.29). Only LOC by EDE-Q (SBE and OBE) (and the conflict subscale of FES) were significant predictors of rate of weight change over time, predicting a reduced rate of change in BMI following surgery. Adolescents who did not report LOC had a lower BMI (0.6) at each post-surgery time point in comparison to those who did report LOC. Problems with LOC prior to surgery led to a decreased rate of weight loss during the year following surgery.
Hunsacker et al. 2018	N/A. Only data is on LOC at baseline as a predictor for psychopathology: Beta = 0.85, p-value = 0.01, OR 2.34	N/A. Only data is on LOC at 24-month FU as a predictor for psychopathology: Beta = 1.16, p-value < 0.001, OR 3.18	BMI: 51.6 (8.4)	BMI: 36.0 (8.6). % change in weight over 24 months: -29.96 (SD 11.2) (vs. 6.98 SD 10.8 in control group)	Surgery group achieved 30% mean weight loss; Non-surgery group achieved 7% mean weight gain. Most participants remained obese at 24 months. At baseline, reporting LOC was associated with higher odds of psychopathology at 24-motnhs. A recent study, Teen-LABS, demonstrated that post-operatively, many adolescents' LOC remits, and the presence of post-operative LOC-eating (but not pre-operative) is associated with poorer weight loss outcomes during follow-up.
Antunes et al. 2009	Female 15.53 (SD 7.39) Male 14.60 (SD 9.16)	Female 10.25 (SD 5.27) Male 7.45 (SD 6.82)	BMI: 35.62 (4.18)	BMI: Female 32.59 (SD 4.50) Male 32.04 (SD 5.20)	A statistically significant decrease in BE scores in both females and males was found after therapy. This is in part attributed to a decrease in anxiety scores, since anxious individuals are more likely to develop binge eating disorders.
Carnier et al. 2010	BES = 17	Short term: BES = 13; Long term: BES = 10	BMI: 36.08 (0.78)	BMI: 32.13 (SD 0.79) Weight (kg): 88.76 (SD 2.02)	Similar to the group's previous study (Carnier et al. 2008), this study found that BE symptoms improved after short-term and long-term therapy.
Carnier et al. 2008	BES: 18.00 (SD 6.65) BE prevalence: 40% 10.12% severe BED, 30.33% moderate BE, 59.55% non-binger	BES: 11.61 (SD 7.69) BE prevalence: 17% 5.88% severe BED, 11.49% moderate BE, 82.63% non-bingers	BMI: 36.93 (4.41)	BMI: 34.27 (SD 4.78)	Intervention improved BMI, body weight, and eating disorder symptoms in obese adolescents. Short-term therapy significantly reduced BED symptom prevalence in both genders, significantly reducing the possibility of adolescents developing BED by encouraging normal eating behaviors.
Damaso et al. 2013	BE prevalence: 6%	BE prevalence: 2%	BMI: 37.0 (4.95)	BMI after therapy = 32.9 (SD 5.32)	Interdisciplinary management reduced symptoms of eating disorders, including BED. There was a statistically significant decrease in BE and in BMI.

First author, Pub year	Baseline BE/LOC	FU BE/LOC	Baseline BMI or other weight variable: Mean (SD)	Weight Loss	Main Findings
Eichen et al. 2019	27.5% reported LOC	16.3% post-Tx, 16.2% at 18-month FU	PBT group: z-BMI: 2.02 (0.36) FBT group: z-BMI: 1.98 (0.32)	At 18 months post-treatment; PBT group: z-BMI: 1.82 (0.49) FBT group: z-BMI: 1.82 (0.40) (according to results published in Boutelle et al. 2017)	LOC eating decreased from baseline to post-treatment (B=−. 709; SE=.328; z=−2.16; p=.031) and from baseline to 18-month follow-up (B=−.662; SE=.336; z=−1.970; p=.049). No other variables were related to change in LOC. Post-treatment z-BMI was not related to post-treatment LOC (B=.359; SE=1.110; p=.75), when baseline z-BMI was accounted for. Change in LOC are not explained solely by change in z-BMI.
Shomaker et al. 2017	IPT: 3.1 (SD 1.8, range 1-6) HE 2.6 (SD 1.4, range 1-6)	LOC-eating persisted in 38% of IPT children and 77% of HE children at post-treatment, but no sig diff b/w groups at F/Us	BMI for IPT: 28.4 (3.4), range 23.2-32.3 BMI for HE: 27.2 (4.9), range 21.1-36.6	z-BMI loss At post-treatment: IPT -0.01 (range -0.06 to 0.04); HE 0.1 (-0.4 to 0.07) At 1-year FU: IPT +0.01 (-0.10 to 0.12); HE -0.04 (-0.15 to 0.06)	Post-treatment, LOC persisted in 38% of IPT group and 77% of HE group (OR = -1.99, $p < 0.05$). LOC persistence didn't differ at 6 months or at 1-year post-treatment. Prevalence of BE didn't differ between treatments at any follow-up. This suggests that children with LOC and overweight/obesity may benefit from FB-IPT. It also appears to reduce depressive symptoms in youth with LOC and overweight/obesity.
Tanofsky-Kraff et al. 2010	52.6% reported LOC at baseline Mean episodes per month: IPT 3.5 (SD 5.4) vs. HE 1.2 (SD 1.9).	Mean LOC episodes/month at 6-month F/U: IPT 0.53 (SD 0.9) vs HE 0.21 (SD 0.5)	BMI for IPT: 25.1 (2.8) BMI for HE: 25.6 (3.1)	at 1-year FU: IPT: BMI 25.9 (SD 3.3), z-BMI 1.2 (SD 0.5) HE: BMI 26.2 (SD 3.6), z-BMI 1.2 (SD 0.5). % BMI growth: IPT 79% less than expected; HE 47% less than expected	Of the 52.6% of girls who reported LOC at baseline, the IPT-WG group experienced significantly greater reductions in LOC episodes when compared to HE group at 6-month F/U (IPT-WG: .53 ± 0.9 vs. HE: .21± 0.5, F=4.7, p=.036, partial $\eta 2$=.12). This study shows preliminary support that IPT-WG may decrease LOC and prevent excess BMI gain. The decrease in LOC may be the mechanism for the decrease in BMI. Although 52.6% of participants reported LOC at baseline, the focus of the experimental therapy on linking interpersonal functioning and negative affect to LOC and overeating may decrease excess energy intake, leading to decrease OE and LOC and greater BMI maintenance.
Germann et al. 2006	5.36 (SD 4.66)	N/A (only measured at baseline)	BMI: 43.61 (12.60) z-BMI: 6.03 (3.25)	Mean z-BMI change: -0.05 (SD 1.41)	Weight loss outcomes of this study were less favorable than those of studies with less overweight, more affluent, and primarily Caucasian groups. Pretreatment behaviors (including binge eating behaviors) were not found to be significantly different between the successful and less successful groups of participants.

Table S3.1 Risk of Bias Assessment – Cochrane Tool for Randomized Clinical Trials

Criteria	Tanofksy-Kraff et al. 2010	Tanofksy-Kraff et al. 2014	Tanofksy-Kraff et al. 2017	Shomaker et al. 2017	Jones et al. 2008	Wildes et al. 2010	Eichen et al. 2019	Bishop-Gilyard et al. 2011
1.1 Was the allocation sequence random?	Y	Y	Y	Y	Y	Y	Y	Y
1.2 Was the allocation sequence concealed until participants were enrolled and assigned to interventions?	NR	NR	NR	NR	NR	NR	NR	NR
1.3 Did baseline differences between intervention groups suggest a problem with the randomization process?	N	N	N	N	Y	NR	N	N
2.1. Were participants aware of their assigned intervention during the trial?	Y	Y	Y	Y	Y	Y	Y	N
2.2. Were carers and people delivering the interventions aware of participants' assigned intervention during the trial?	Y	Y	Y	Y	Y	Y	Y	N
2.3. [If applicable:] If Y/PY/NI to 2.1 or 2.2: Were important non-protocol interventions balanced across intervention groups?	NR	NR	NR	NR	NR	NR	NR	NA
2.4. [If applicable:] Were there failures in implementing the intervention that could have affected the outcome?	N	N	N	N	N	N	N	N
2.5. [If applicable:] Was there non-adherence to the assigned intervention regimen that could have affected participants' outcomes?	NR	N	N	NR	Y	NR	NR	N
2.6. If N/PN/NI to 2.3, or Y/PY/NI to 2.4 or 2.5: Was an appropriate analysis used to estimate the effect of adhering to the intervention?	Y	NA	NA	Y	N	Y	Y	NA
3.1 Were data for this outcome available for all, or nearly all, participants randomized?	Y	Y	Y	N	N	N	Y	Y
3.2 If N/PN/NI to 3.1: Is there evidence that the result was not biased by missing outcome data?	-	-	-	N	Y	N	-	-
3.3 If N/PN to 3.2: Could missingness in the outcome depend on its true value?	-	-	-	PN	PN	N	-	-
3.4 If Y/PY/NI to 3.3: Is it likely that missingness in the outcome depended on its true value?	-	-	-	-	-	-	-	-
4.1 Was the method of measuring the outcome inappropriate?	N	N	N	N	N	N	N	N
4.2 Could measurement or ascertainment of the outcome have differed between intervention groups?	N	N	N	N	N	N	N	N
4.3 If N/PN/NI to 4.1 and 4.2: Were outcome assessors aware of the intervention received by study participants?	N	N	N	NR	N	Y	NR	N
4.4 If Y/PY/NI to 4.3: Could assessment of the outcome have been influenced by knowledge of intervention received?	NA	NA	NA	NA	NA	N	NA	NA
4.5 If Y/PY/NI to 4.4: Is it likely that assessment of the outcome was influenced by knowledge of intervention received?	NA	NA	N	NA	N	NA	N	NA
5.1 Were the data that produced this result analysed in accordance with a pre-specified analysis plan that was finalized before unblinded outcome data were available for analysis?	Y	Y	Y	Y	Y	Y	Y	Y
5.2: Is the numerical result being assessed likely to have been selected, on the basis of the results, from multiple eligible outcome measurements (e.g. scales, definitions, time points) within the outcome domain?	N	N	N	N	N	N	Y	N
5.3: Is the numerical result being assessed likely to have been selected, on the basis of the results, from multiple eligible analyses of the data?	N	N	N	N	N	N	N	N

Table S3.2 Risk of Bias Assessment – Cochrane Tool for Non-Randomized Case-Control Studies

Criteria	Jarvholm et al. 2020	Hunsacker et al. 2018	Germann et al. 2006
1.1 Is there potential for confounding of the effect of intervention in this study?	Y	Y	Y
1.2 Was the analysis based on splitting participants' follow up time according to intervention received?	N	N	N
1.4 Did the authors use an appropriate analysis method that controlled for all the important confounding domains?	Y	Y	Y
1.5 Were confounding domains that were controlled for measured validly and reliably by the variables available in this study?	Y	Y	Y
1.6 Did the authors control for any post- intervention variables that could have been affected by the intervention?	Y	Y	N
1.7 Did the authors use an appropriate analysis method that controlled for all the important confounding domains and for time-varying confounding?	Y	Y	Y
2.1 Was selection of participants into the study (or into the analysis) based on participant characteristics observed after the start of intervention?	N	N	N
2.4 Do start of follow-up and start of intervention coincide for most participants?	Y	Y	Y
3.1 Were intervention groups clearly defined?	Y	Y	Y
3.2 Was the information used to define intervention groups recorded at the start of the intervention?	Y	Y	Y
3.3 Could classification of intervention status have been affected by knowledge of the outcome or risk of the outcome?	N	N	N
4.1 Were there deviations from the intended intervention beyond what would be expected in usual practice?	N	N	N
5.1 Were outcome data available for all, or nearly all, participants?	Y	Y	Y
5.2 Were participants excluded due to missing data on intervention status?	NR	Y	N
5.3 Were participants excluded due to missing data on other variables needed for the analysis?	N	N	NR
6.1 Could the outcome measure have been influenced by knowledge of the intervention received?	N	N	PN
6.2 Were outcome assessors aware of the intervention received by study participants?	NR	NR	NR
6.3 Were the methods of outcome assessment comparable across intervention groups?	Y	Y	Y
6.4 Were any systematic errors in measurement of the outcome related to intervention received?	NR	NR	N
7.1 Is the reported effect estimate likely to be selected on the basis of the results from multiple outcome measurements within the outcome domain?	N	N	N
7.2 Is the reported effect estimate likely to be selected on the basis of the results from multiple analyses of the intervention-outcome relationship?	PN	N	PN
7.3 Is the reported effect estimate likely to be selected on the basis of the results from different subgroups?	N	N	N

Table S3.3 Risk of Bias Assessment – RIT Tool for Cohort Studies

Criteria	Braet et al. 2004	Braet et al. 2006	Braet et al. 2009	Goossens et al. 2011	Goossens et al. 2009	Van Vlierberghe et al. 2009	Teder et al. 2013	Levine et al. 2006	Albayrak et al. 2019	Goldschmidt et al. 2018
1. Do the inclusion/exclusion criteria vary across the individuals of the study?	N	N	N	N	N	N	N	N	N	N
2. Does the strategy for recruiting participants into the study differ across individuals?	N	N	N	N	N	N	N	N	N	N
3. Is the selection of the comparison group inappropriate, after taking into account feasibility and ethical considerations?	N	N	N	N	N	N	N	N	N	Y
4. Does the study fail to account for important variations in the execution of the study from the proposed protocol?	N	N	N	N	N	N	N	N	N	N
5. Was the outcome assessor not blinded to the intervention or exposure status of participants?	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
6. Were valid and reliable measures, implemented consistently across all study participants used to assess inclusion/exclusion criteria, intervention/exposure outcomes, participant health benefits and harms, and confounding?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
7. Was the length of follow-up different across study groups?	N	N	N	N	N	N	N	N	N	N
8. In cases of high loss to follow-up (or differential loss to follow-up), was the impact assessed (e.g., through sensitivity analysis or other adjustment method)?	NA	NR	NA	N	NA	Y	NA	N	N	NA
9. Are any important primary outcomes missing from the results?	N	N	N	N	N	N	N	N	N	N
10. Are any important harms or adverse events that may be a consequence of the intervention/exposure missing from the results?	N	N	N	N	N	N	N	N	N	N
11. Are results believable taking study limitations into consideration?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
12. Any attempt to balance the allocation between the groups or match groups (e.g., through stratification, matching, propensity scores).	Y	NA	NA	NA	NA	NA	NA	NA	NA	NA
13. Were important confounding variables not taken into account in the design and/or analysis (e.g., through matching, stratification, interaction terms, multivariate analysis, or other statistical adjustment such as instrumental variables)?	Y	N	N	N	N	N	N	Y	N	Y

Table S3.3 Risk of Bias Assessment – RIT Tool for Cohort Studies (continued)

Criteria	Mackey et al. 2018	Sysko et al. 2013	Antunes et al. 2009	Carnier et al. 2008	Carnier et al. 2010	Damaso et al. 2013	Jarvholm et al. 2018	Balantekin et al. 2017
1. Do the inclusion/exclusion criteria vary across the individuals of the study?	N	N	N	N	N	N	N	N
2. Does the strategy for recruiting participants into the study differ across individuals?	N	N	N	N	N	N	N	N
3. Is the selection of the comparison group inappropriate, after taking into account feasibility and ethical considerations?	NA	NA	NA	NA	NA	NA	NA	NA
4. Does the study fail to account for important variations in the execution of the study from the proposed protocol?	N	N	N	N	N	N	N	N
5. Was the outcome assessor not blinded to the intervention or exposure status of participants?	NR	NR	NR	NR	NR	NR	NR	NR
6. Were valid and reliable measures, implemented consistently across all study participants used to assess inclusion/exclusion criteria, intervention/exposure outcomes, participant health benefits and harms, and confounding?	Y	Y	Y	Y	Y	Y	Y	Y
7. Was the length of follow-up different across study groups?	N	N	N	N	N	N	N	N
8. In cases of high loss to follow-up (or differential loss to follow-up), was the impact assessed (e.g., through sensitivity analysis or other adjustment method)?	NA	NR	N	NR	NR	NA	NA	NR
9. Are any important primary outcomes missing from the results?	N	N	N	N	N	N	N	N
10. Are any important harms or adverse events that may be a consequence of the intervention/exposure missing from the results?	N	N	N	N	N	N	N	N
11. Are results believable taking study limitations into consideration?	Y	Y	Y	Y	Y	Y	Y	Y
12. Any attempt to balance the allocation between the groups or match groups (e.g., through stratification, matching, propensity scores).	NA	NA	NA	NA	NA	NA	NA	NA
13. Were important confounding variables not taken into account in the design and/or analysis (e.g., through matching, stratification, interaction terms, multivariate analysis, or other statistical adjustment such as instrumental variables)?	Y	Y	Y	Y	Y	Y	Y	N

Table S4.1 Quality Assessment – Randomized Clinical Trials

Criteria	Tanofksy-Kraff et al. 2010	Tanofksy-Kraff et al. 2014	Tanofksy-Kraff et al. 2017	Shomaker et al. 2017	Jones et al. 2008	Wildes et al. 2010	Eichen et al. 2019	Bishop-Gilyard et al. 2011
	Y	Y	Y	Y	Y	Y	Y	Y
2. Was the method of randomization adequate (i.e., use of randomly generated assignment)?	Y	Y	Y	Y	Y	NR	NR	NR
3. Was the treatment allocation concealed (so that assignments could not be predicted)?	Y	Y	Y	Y	Y	NR	NR	Y
4. Were study participants and providers blinded to treatment group assignment?	N	N	N	N	N	NR	N	Y
5. Were the people assessing the outcomes blinded to the participants' group assignments?	NR	Y	NR	NR	Y	N	NR	Y
6. Were the groups similar at baseline on important characteristics that could affect outcomes (e.g., demographics, risk factors, co-morbid conditions)?	N	Y	Y	Y	Y	Y	Y	Y
7. Was the overall drop-out rate from the study at endpoint 20% or lower of the number allocated to treatment?	Y	Y	N	N	Y	Y	Y	N
8. Was the differential drop-out rate (between treatment groups) at endpoint 15 percentage points or lower?	Y	Y	Y	Y	Y	NR	NR	Y
9. Was there high adherence to the intervention protocols for each treatment group?	Y	Y	Y	Y	N	NR	NR	Y
10. Were other interventions avoided or similar in the groups (e.g., similar background treatments)?	Y	Y	N	Y	Y	Y	NR	Y
11. Were outcomes assessed using valid and reliable measures, implemented consistently across all study participants?	Y	Y	Y	Y	Y	Y	Y	Y
12. Did the authors report that the sample size was sufficiently large to be able to detect a difference in the main outcome between groups with at least 80% power?	N	Y	Y	N	Y	Y	NR	NR
13. Were outcomes reported or subgroups analyzed prespecified (i.e., identified before analyses were conducted)?	NR	NR	N	NR	NR	NR	N	NR
14. Were all randomized participants analyzed in the group to which they were originally assigned, i.e., did they use an intention-to-treat analysis?	Y	Y	NR	Y	Y	Y	Y	NR

Table S4.2 Quality Assessment – Case-Control Studies

Criteria	Jarvholm et al. 2020	Hunsacker et al. 2018	Germann et al. 2006
1. Was the research question or objective in this paper clearly stated and appropriate?	Y	Y	Y
2. Was the study population clearly specified and defined?	Y	Y	Y
3. Did the authors include a sample size justification?	N	N	N
4. Were controls selected or recruited from the same or similar population that gave rise to the cases (including the same timeframe)?	Y	Y	N
5. Were the definitions, inclusion and exclusion criteria, algorithms or processes used to identify or select cases and controls valid, reliable, and implemented consistently across all study participants?	Y	Y	Y
6. Were the cases clearly defined and differentiated from controls?	Y	Y	Y
7. If less than 100 percent of eligible cases and/or controls were selected for the study, were the cases and/or controls randomly selected from those eligible?	NA	NA	NR
8. Was there use of concurrent controls?	Y	Y	Y
9. Were the investigators able to confirm that the exposure/risk occurred prior to the development of the condition or event that defined a participant as a case?	Y	Y	Y
10. Were the measures of exposure/risk clearly defined, valid, reliable, and implemented consistently (including the same time period) across all study participants?	Y	Y	Y
11. Were the assessors of exposure/risk blinded to the case or control status of participants?	NA	NR	NR
12. Were key potential confounding variables measured and adjusted statistically in the analyses? If matching was used, did the investigators account for matching during study analysis?	Y	Y	NR

Table S4.3 Quality Assessment – Before-After (Pre-Post) Studies

Criteria	Braet et al. 2004	Braet et al. 2006	Braet et al. 2009	Goossens et al. 2011	Goossens et al. 2009	Van Vlierbergh e et al. 2009	Teder et al. 2013	Levine et al. 2006	Albayrak et al. 2019	Goldschmi dt et al. 2018
1. Was the study question or objective clearly stated?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2. Were eligibility/selection criteria for the study population prespecified and clearly described?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3. Were the participants in the study representative of those who would be eligible for the test/service/intervention in the general or clinical population of interest?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4. Were all eligible participants that met the prespecified entry criteria enrolled?	N	N	N	Y	Y	Y	N	Y	Y	Y
5. Was the sample size sufficiently large to provide confidence in the findings?	Y	Y	N	Y	Y	N	N	NR	Y	Y
6. Was the test/service/intervention clearly described and delivered consistently across the study population?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
7. Were the outcome measures prespecified, clearly defined, valid, reliable, and assessed consistently across all study participants?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
8. Were the people assessing the outcomes blinded to the participants' exposures/interventions?	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
9. Was the loss to follow-up after baseline 20% or less? Were those lost to follow-up accounted for in the analysis?	Y	Y	Y	N	Y	Y	Y	Y	N	Y
10. Did the statistical methods examine changes in outcome measures from before to after the intervention? Were statistical tests done that provided p values for the pre-to-post changes?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
11. Were outcome measures of interest taken multiple times before the intervention and multiple times after the intervention (i.e., did they use an interrupted time-series design)?	N	N	N	N	N	N	N	N	N	N
12. If the intervention was conducted at a group level (e.g., a whole hospital, a community, etc.) did the statistical analysis take into account the use of individual-level data to determine effects at the group level?	NR	NA	NA	NA	NA	NA	NA	NA	NR	NR

Table S4.3 Quality Assessment – Before-After (Pre-Post) Studies (continued)

Criteria	Mackey et al. 2018	Sysko et al. 2013	Antunes et al. 2009	Carnier et al. 2008	Carnier et al. 2010	Damaso et al. 2013	Jarvholm et al. 2018	Balantekin et al. 2017
1. Was the study question or objective clearly stated?	Y	Y	Y	Y	Y	Y	Y	Y
2. Were eligibility/selection criteria for the study population prespecified and clearly described?	N	Y	Y	Y	Y	Y	Y	Y
3. Were the participants in the study representative of those who would be eligible for the test/service/intervention in the general or clinical population of interest?	Y	Y	Y	Y	Y	Y	Y	Y
4. Were all eligible participants that met the prespecified entry criteria enrolled?	NR	NR	NR	NR	Y	NR	NR	Y
5. Was the sample size sufficiently large to provide confidence in the findings?	Y	Y	NR	N	N	NR	NR	Y
6. Was the test/service/intervention clearly described and delivered consistently across the study population?	Y	Y	Y	Y	Y	Y	Y	Y
7. Were the outcome measures prespecified, clearly defined, valid, reliable, and assessed consistently across all study participants?	Y	Y	Y	Y	Y	Y	Y	Y
8. Were the people assessing the outcomes blinded to the participants' exposures/interventions?	NR	NR	NR	NR	NR	NR	NR	NR
9. Was the loss to follow-up after baseline 20% or less? Were those lost to follow-up accounted for in the analysis?	NR	NR	N	Y	Y	Y	Y	N
10. Did the statistical methods examine changes in outcome measures from before to after the intervention? Were statistical tests done that provided p values for the pre-to-post changes?	Y	Y	Y	Y	Y	Y	Y	Y
11. Were outcome measures of interest taken multiple times before the intervention and multiple times after the intervention (i.e., did they use an interrupted time-series design)?	N	N	N	N	N	N	N	N
12. If the intervention was conducted at a group level (e.g., a whole hospital, a community, etc.) did the statistical analysis take into account the use of individual-level data to determine effects at the group level?	NR	NA	NA	NA	NA	NA	NA	NA

Key:
Black = Does not contribute to bias or decrease quality
Red = Increases bias of study or decreases quality
Blue = Potential to increase bias or decrease quality
Abbreviations: CD: cannot determine; NA: Not Applicable; NR: Not Reported