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Can a Short Screening Tool Discriminate Between Overeating and Binge Eating in Treatment-Seeking Individuals with Obesity?

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Abstract

Objective: Existing screening tools are inadequate in differentiating binge eating from normative overeating in treatment-seeking individuals with overweight or obesity, as these individuals tend to overendorse loss-of-control (LOC; the hallmark characteristic of binge eating) on self-report measures. In order for treatment centers to efficiently and accurately identify individuals who would benefit from specialized treatment, it is critical to develop effective brief screening tools. This study examined the sensitivity and specificity of a self-report screener designed to be used by an outpatient treatment center on a large scale.

Methods: Participants were treatment-seeking individuals (N = 364) with overweight or obesity who were administered the screener and who completed a subsequent interview assessing for LOC and binge eating.

Results: Discriminant analyses revealed that the screener achieved 77.6% sensitivity and 77.0% specificity in predicting clinician-assessed LOC and 75.2% sensitivity and 74.1% specificity in predicting "full-threshold" binge eating (i.e., ≥12 objectively large binge-eating episodes within the past 3 months). Post hoc analyses indicated that male participants were more likely to be misclassified with the screener.

Conclusions: The self-report screener demonstrated satisfactory predictive ability, which is notable given the challenges of discriminating between LOC and normative overeating. However, room for improvement remains. In particular, the inclusion of additional screener items that more fully capture the binge-eating experience in males is warranted.

Introduction

The co-occurrence of overweight/obesity and eating disorders (EDs) is high, particularly for binge-spectrum EDs such as bulimia nervosa (BN) and binge-eating disorder (BED). In fact,

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some studies have found that as many as 80% of individuals seeking treatment for BN or BED have overweight or obesity (1,2). Although some individuals with a binge-spectrum ED who also have overweight or obesity present directly to ED treatment programs, a large portion of individuals instead seek treatment designed to facilitate weight loss given the high rates of weight and shape concerns and body dissatisfaction present in binge-spectrum EDs (3). Among individuals presenting for weight-loss treatment, studies that have conducted validated diagnostic interviews have found that up to 32% meet diagnostic criteria for an ED (4–6). As such, a large number of individuals may be engaging in weight-loss programs that do not address, and could possibly exacerbate, an ED. In particular, it is critical to be able to identify the presence of loss-of-control (LOC; the hallmark feature of binge eating associated with psychological distress or impairment) while eating (7) in order for participants to receive specialized interventions that weight-loss treatment professionals would otherwise not implement. The gold-standard assessment for LOC requires a lengthy interview and specialized knowledge and training that may not be possible when screening individuals at a high volume. For treatment facilities or clinical research/medical centers that have both weight-loss and ED treatment programs, the use of efficient and effective screening tools could help ensure that individuals receive the optimal treatment approach.

The development of a short screening tool to identify LOC in individuals with obesity and overweight who are seeking treatment for either EDs or weight management poses several unique challenges. Assessing behavioral ED symptoms such as the presence of LOC while eating or compensatory behaviors (e.g., self-induced vomiting, laxatives, driven exercise) is particularly difficult because individuals presenting for treatment may have an extensive dieting history and may not realize that the “dieting” behaviors they are engaging in actually reflect disordered eating behaviors (e.g., exercise behaviors may not be reported as compulsive or compensatory, laxatives and other diet supplements may not be perceived as needing to be reported) (6–9). Additionally, some individuals presenting for weight-loss treatment may overendorse LOC eating when they are only experiencing more typical overeating episodes, as the distinction between LOC and overeating may be subtle and the notion of LOC may be misinterpreted by participants without careful probing and explanation from an assessor. Indeed, numerous studies have found that individuals seeking weight-loss treatment endorse LOC on a self-report questionnaire at a much higher rate than clinician-rated LOC (5,10,11). Additionally, our team recently found that the self-report version and the interview version of the Eating Disorder Examination (EDE; the gold-standard assessment tool for eating pathology) had no agreement with each other ($\kappa < 0$) in the assessment of binge eating in a weight-loss-seeking sample (12). An alternative is to assess for cognitive symptoms of an ED, such as overconcern with weight and shape; however, individuals without binge eating presenting for weight-loss treatment are also likely to endorse elevated concern about weight and shape or body dissatisfaction (13). In summary, the development of effective and efficient screening tools to triage patients to the appropriate type of eating-related treatment is difficult, but it is sorely needed.

In the highly limited number of studies that have examined screening tools for LOC or binge eating in a treatment-seeking sample, results have been disappointing and inconsistent. For example, the commonly used Questionnaire on Eating and Weight Patterns had only 49% sensitivity in detecting binge eating in a treatment-seeking sample of individuals with

obesity (14), and another study using the EDE questionnaire showed suboptimal sensitivity (25%-49%, depending on diagnosis detected) in detecting *Diagnostic and Statistical Manual of Mental Disorders* (Fifth Edition) *(DSM-5)* ED diagnoses in a weight-loss-seeking sample as determined by clinical interview (6). In addition, a study evaluating the psychometric properties of the EDE questionnaire found that it did not uphold in bariatric surgery candidates with obesity (14). One study had good success using the Risk Factors for Binge-Eating in Overweight questionnaire (95.1% sensitivity and 81.5% specificity); however, the sample consisted of individuals currently in weight-loss or ED treatment who had likely received psychoeducation about binge eating and its characteristics (9), the questionnaire was lengthy at 30 items, and the study had only 50 participants. Furthermore, most of these studies included very few individuals who met criteria for an ED, and the focus was on detecting full-threshold BN and BED (and largely did not focus on subthreshold ED pathology). As such, there remains a critical gap in the literature for a brief screening tool that can differentiate LOC eating (full-threshold and subthreshold) from overeating in a treatment-seeking sample on a large scale.

In order to facilitate efficient screening of the high volume of participants seeking entry into a clinical trial for weight-loss or ED treatment, our clinical research center implemented an online screening system that had participants complete a screening tool we created (composed of 15 items) to determine whether they may be eligible for a clinical trial. We chose items for the screening tool based on existing screening tools and added items that we believed would address some of the limitations in existing screening tools (see Methods). Between December 2019 and February 2020, we collected data on 364 individuals with overweight and obesity who completed our screening tool and a 30-minute phone call with a highly trained clinical interviewer in which LOC was assessed via the gold-standard EDE binge-eating module. In the current study, our aims were as follows: (1) to examine the sensitivity and specificity of our screening tool in distinguishing clinician-assessed LOC from those without LOC and (2) to examine the sensitivity and specificity of the same items in identifying individuals who reported at least 12 objectively large binge-eating episodes when assessed by a trained assessor, suggesting that they met the behavioral *DSM-5* criteria for either a BED or BN diagnosis (i.e., full-threshold). We aimed to achieve at least 70% sensitivity and 70% specificity of the screener as determined by discriminant analysis. We based this 70% threshold on previous machine-learning research that established 70% as a benchmark in an initial study such as the present study (15), although, ultimately, we sought to improve the screener's predictive ability. In order to better understand how to improve the screener, we also examined the relative predictive ability of each of the screening items. Lastly, as an exploratory aim, we ran post hoc analyses to identify patterns in individuals who were incorrectly classified via self-report to provide future directions for refining screening measures.

Methods

Procedure

During the 3 months of data collection, our clinical research center had five ongoing clinical trials for eating and weight disorders (three trials treating BN/BED and two weight-loss

trials). Recruitment methods included radio ads, newspaper ads, ad mailings to university employees, online postings (Craigslist, social media, Web search), and flyers distributed in the community, as well as referrals from friends, professionals in the community, or the research center's outpatient clinic for eating and weight concerns. Paid advertising during that time period was primarily targeted toward individuals seeking weight-loss treatment but binge eating also was mentioned. Interested participants were directed to complete an online interest survey that included various questions relating to eligibility (e.g., age, location), as well as the screening tool being evaluated in the current study (see the "Measures" section). Individuals who met the initial common inclusion criteria across studies (18–75 years old, no history of weight-loss surgery, able to commute to the research center) were directed to schedule a phone screen with a trained clinical interviewer to further assess binge eating and other study-specific inclusion and exclusion criteria, which aided in triaging participants to the appropriate clinical trial. Clinical interviewers were staff members who had completed comprehensive training for administering the EDE binge-eating module, which included attending 2 hours of didactic meetings about assessing LOC and determining binge-eating episode sizes, completing approximately five mock phone screens, shadowing at least two phone screens conducted by trained interviewers, and being shadowed by trained interviewers while conducting at least two phone screens. The study was approved by the Drexel Institutional Review Board.

Participants

Between December 2019 and February 2020, 1,115 participants completed the online interest survey. Of these, 462 participants met the initial common eligibility criteria on the interest survey and scheduled a phone screen, 403 participants completed a phone screen, and 392 completed the binge-eating module section of the phone screen (11 participants did not endorse feelings of overeating in one sitting over the past 3 months and were not asked about LOC eating). Because the current investigation is focused on individuals who have overweight or obesity, for the purpose of the current study we removed individuals with BMI < 25.0 kg/m^2 (based on self-report height and weight). Therefore, the final sample for the current study was 364 participants.

Measures

LOC/binge-eating screening tool.—The online interest survey included a LOC/binge-eating screener composed of 15 self-report items designed to assess eating pathology over the past 3 months (see online Supporting Information). The items fell into three categories: (1) ED behaviors (LOC, binge eating, and compensatory behaviors); (2) binge-eating features and distress from the *DSM-5* binge-eating criteria; and (3) general overeating behaviors. Except for one item (distress) that was rated on a Likert scale from 1 to 6, each item called for a "Yes or No" response that indicated the presence (or absence) of the item during eating episodes over the past 3 months.

Given that eligibility for our center's ED-treatment trials was determined by an ED diagnosis using the EDE interview (the gold-standard assessment tool for LOC and binge eating), four of the ED-behavior items described LOC or binge eating and they were primarily derived from the EDE (16). One additional ED-behavior item assessed

engagement in compensatory behaviors (e.g., vomiting, laxatives, fasting for 24 hours or longer). We chose to include an item assessing for compensatory behaviors because endorsement of compensatory behavior typically indicates the presence of LOC or binge eating. Six items asked participants to endorse whether they experienced any of the *DSM-5* binge-eating features (yes or no) and to rate their overall distress surrounding LOC or overeating episodes over the past 3 months (Likert 0–6 rating). We included survey logic that automatically adjusted the phrasing of the binge-eating features and distress questions based on whether the participant endorsed any LOC items. For example, if the participant endorsed any of the four LOC items, the binge-eating features and distress questions referenced LOC eating (e.g., "Above you checked off regularly experiencing eating episodes when you felt you had lost control while eating. During these eating episodes, have you typically…"). If the participant did not endorse LOC eating, the binge-eating features and distress questions referred to overeating episodes (e.g., "Above you checked off regularly experiencing overeating episodes. During these eating episodes, have you typically…"). In order to minimize overendorsement of the LOC items due to lack of other items consistent with participant experiences, we included four "overeating-only" items that individuals seeking weight-loss treatment would likely endorse (e.g., mindless eating, liking the taste of foods).

Clinician-assessed binge eating.—During a subsequent phone screen, clinical interviewers administered the binge-eating module of the EDE (17,18), the gold-standard assessment tool for assessing LOC eating, size of binge-eating episodes, and frequency of objectively large and subjectively large binge-eating episodes. Outcome variables for the current study included engagement in any LOC eating over the past 3 months (LOC group) and ≥12 episodes of objectively large binge-eating episodes over the past 3 months (full-threshold group), as rated by clinical interviewers.

Statistical analysis

Discriminant analyses were performed to determine whether, for Aim 1, the self-report screener items predicted clinician-assessed LOC eating and whether, for Aim 2, the self-report screener items predicted clinician-assessed full-threshold status. A canonical discriminant analysis was subsequently conducted, in which linear combinations of differentially weighted variables were constructed. Additionally, a leave-one-out cross-validation was performed, in which the discriminant function was derived by leaving out each observation in turn and then classifying that observation to determine the accuracy of the derived discriminant function. We derived specificity (proportion of participants without LOC or full-threshold correctly identified by screening items) and sensitivity (proportion of patients with LOC or full-threshold correctly identified by the screening items) of the self-report screener using both the full data set and the leave-one-out classification method. In other words, the discriminant function took the combination of the screening items and computed a probability of whether the individual belongs in the target group (e.g., has LOC or not, as determined by interview) and classified them into the group with the higher probability. This categorization was then compared with the categorization made by the phone interview, from which accuracy was derived.

For our exploratory aim, we examined whether demographic characteristics explained the difference between correctly and incorrectly classified participants using χ^2 and ANOVA tests. As described later in the present study, we detected a higher proportion of males in the incorrectly classified group and thus performed additional post hoc discriminant analyses separately by gender to examine whether (1) sensitivity/specificity of the self-report screener was different by gender and (2) whether different sets of items predicted clinician-assessed LOC or full-threshold status by gender.

Results

Sample characteristics

Of the 364 participants included in the current analysis, 76.2% (n = 279) identified as female, 22.4% (n = 82) identified as male, and 0.5% (n = 2) identified as nonbinary or other. Participants were between 18 and 74 years old (mean 49.99 [SD 13.89]), and their BMIs ranged from 25.05 to 71.87 (mean 35.71 [SD 7.65]). Ethnicity and race were not assessed in the interest survey or during the phone screen and therefore are not available for the current sample. However, race ranges for the studies that were recruiting at the time of this analysis are as follows: 60.2% to 72.5% White, 18.8% to 30.4% African American or Black, 2.2% to 4.6% Asian, 0% to 4.6% more than one race, and 0% Native American or Hawaiian/Pacific Islander.

Detecting clinician-assessed LOC

Over half of participants (52.7%, N = 192) experienced LOC in the past 3 months as determined by clinician interview. Overall sensitivity for the self-report screener detecting membership in the clinician-assessed LOC group was 77.6% and specificity was 77.0%. In the leave-one-out cross-validation, sensitivity was 74.5% and specificity was 74.1%. The canonical correlation between LOC status and the self-report-items variables was 0.59, and the derived discriminant function was significant (χ^2 = 154.89, df = 16, P < 0.01), indicating that the screener was able to distinguish between the groups. The individual standardized canonical coefficients for each self-repor item can be found in Table 1. The three most predictive items were ED-behavior items that described LOC and binge eating: (1) I've experienced binge eating; (2) I felt I lost control while eating; and (3) I was unable to prevent the eating episode from starting.

Detecting clinician-assessed full-threshold status

For the purposes of this analysis, participants were grouped into the full-threshold group or the non-full-threshold group. A large minority of all participants (37.9%, N = 138) endorsed at least 12 objective binge-eating episodes in the past 3 months as assessed by clinician interview. Overall sensitivity for the self-report items detecting membership in the clinician-assessed full-threshold group was 75.2% and specificity was 74.1%. In the leave-one-out cross-validation, sensitivity was 73.9% and specificity was 69.7%. The canonical correlation between the full-threshold and the non-full-threshold groups and the self-report-items variables was 0.52, and the derived discriminant function was significant (χ^2 = 110.77, df = 16, P < 0.01), indicating that the screener distinguished between the groups. The individual standardized canonical coefficients for each item can be found in Table 1. The three most

predictive items were ED-behavior items: (1) I've experienced binge eating; (2) I felt I had lost control while eating; and (3) I've made myself vomit, taken laxatives, and/or fasted more than 24 hours in order to control my weight or to try to make up for an overeating episode.

Characteristics of correctly and incorrectly classified participants

A χ^2 analysis revealed a trend-level proportional difference ($\chi^2 = 3.28$, $P = 0.07$) in the proportion of males (30.1%) versus females (20.7%) who were misclassified as either having or not having LOC. No significant differences in age ($t(390) = 1.31$, $P = 0.19$) or BMI ($t(390) = 1.032$, $P = 0.33$) were detected between correctly and incorrectly classified individuals.

Of the males in this study, 46.9% were assessed to have clinician-assessed LOC, and 57.2% of females were assessed to have LOC. Separate discriminant function analyses by gender revealed that the self-report items had 78.9% sensitivity and 76.4% specificity for predicting clinician-assessed LOC in females (cross-validation sensitivity and specificity = 77.0% and 74.8%, respectively). Discriminant analyses in males revealed 71.8% sensitivity and 79.1% specificity for predicting clinician-assessed LOC (cross-validation sensitivity and specificity = 61.5% and 58.1%, respectively). Self-report items had 73.1% sensitivity and 73.1% specificity (cross-validation sensitivity and specificity = 71.2% and 69.7%, respectively) for predicting clinician-assessed full-threshold status in females and 84.8% sensitivity and 81.6% specificity (cross-validation sensitivity and specificity = 63.6% and 71.4%, respectively) for predicting clinician-assessed full-threshold status inmales. Given the slightly larger proportion of males misclassified, we examined the performance of each screening item by gender in Table 2. There appeared to be some differences in the self-report items that appeared to hold the greatest predictive power for males versus females (Table 2; the top three most predictive items in each category are bolded).

Discussion

This study is the largest to date, to our knowledge, to examine the predictive ability, sensitivity, and specificity of a short screening tool designed to identify LOC eating in a sample of treatment-seeking individuals with overweight or obesity. Our short self-report screening tool achieved approximately 75% sensitivity and 75% specificity in predicting both clinician-assessed LOC and full-threshold binge-eating status, exceeding our benchmark of 70% sensitivity and 70% specificity for the initial version of the screener. Our screening tool's predictive accuracy exceeds that of previous studies that have attempted to use very brief screening tools in treatment-seeking samples (6,14). Although there remains considerable room for improvement in predictive accuracy, the initial success of this screener represents a notable improvement in our ability to use a relatively small number of self-report items to discriminate LOC eating from normative overeating.

In order to better understand how to improve the screening tool for triaging purposes, we examined the relative predictive ability of each item and identified overall patterns in the items that tended to be the most predictive. In the overall sample, the items most predictive of LOC were either those that used the term binge eating specifically (e.g., having

experienced binge eating) or items that described cognitive experience of LOC (e.g., having lost control while eating and having felt unable to stop eating). These items may have been the most predictive because they are the most similar to the LOC questions used as part of the EDE interview, the gold-standard assessment for binge eating. Interestingly, the items included in the *DSM-5* binge-eating features were not useful in distinguishing binge eating from overeating despite being part of the *DSM-5* BED diagnostic criteria. Prior research on the validity of binge-eating features has been mixed (18–20); however, none of these prior studies has explored whether binge-eating features are predictive of LOC in a treatment-seeking sample. Consistent with previous research, our results suggest that many treatment-seeking individuals with overweight or obesity may endorse binge-eating features at a high rate even if they do not experience LOC as determined by clinical interview (12). Unexpectedly, distress about overeating or binge-eating episodes was negatively predictive of LOC and full-threshold binge eating. As individuals with overweight and obesity frequently report feeling distressed about overeating episodes (21), distress is likely not a useful metric for distinguishing LOC in individuals who are seeking treatment for managing their eating.

Post hoc analyses indicated that males made up a slightly higher proportion of incorrectly classified LOC eating but that the screener performed well in predicting full-threshold binge eating in males. The LOC findings should be interpreted cautiously given the low proportion of males in the sample and the marginal significance levels; however, the LOC findings are consistent with research demonstrating that there may be gender differences in the experience of binge eating. As such, the male experience of binge eating may need to be better captured by screening tools. In our sample, items that were most predictive of LOC in males tended to be more physiological (e.g., eating until uncomfortably full) or contextual (e.g., eating alone, eating more than intended), whereas the items most predictive of LOC in females tended to be more psychological (e.g., lost control while eating). This finding was consistent with prior research indicating that males more frequently define binge-eating episodes by the physiological consequences, whereas females more frequently define binge-eating episodes by the psychological experience of being out of control (22). With regard to high sensitivity and specificity (>80%) in detecting full-threshold binge eating in males, it is possible that, given stigma associated with seeking treatment, males who do seek treatment are more likely to meet a full-threshold binge-eating diagnosis. Further research should continue to examine potential gender differences in the experience of binge eating.

Although the screening tool achieved adequate (i.e., >70%) sensitivity and specificity, there is room for improvement in the predictive accuracy of the measure given that nearly one-third of participants were incorrectly classified. In particular, increasing the sensitivity of the screening tool is critical in order to reduce false negatives from screening (and thus reduce the number of individuals with an ED entering a treatment that does not address ED). With the exception of gender (described earlier in the present study), no notable differences in the demographic characteristics were detected between correctly and incorrectly classified participants. Given the short nature of the initial interest survey used for the present analysis, we were limited in the amount of data that could be collected. However, several possible additional factors could characterize incorrectly classified participants. First, these participants may not relate to the cognitive or psychological manner in which LOC is

typically described. A possible way to increase the sensitivity of the screening tool is to include additional LOC prompts and examples from the EDE that illustrate the experience of LOC more descriptively (e.g., using metaphors to describe the experience of LOC, such as a ball rolling down a hill or a train going off the tracks). It may also be important to include non-EDE items that tap into other aspects of LOC or binge-eating experiences that the EDE does not assess. Conducting qualitative interviews may lend new ideas for effective screening items. Additionally, participants who were incorrectly classified may identify more with the context in which they overeat or binge eat, and such contexts may be predictive of whether eating episodes are characterized by LOC or not. As such, including items regarding the drivers of overeating or binge eating (e.g., going long periods of time without eating, restricting entire food groups) or contexts in which overeating occurs (e.g., with family and/or friends, at restaurants) may lend additional predictive ability. Our results indicate that including more items that capture the physiological and contextual aspects of binge eating (e.g., fullness) could also potentially reduce the number of false negatives in males and thus increase the sensitivity of our screening tool. Furthermore, in a subsequent iteration of the screener, it may be important to remove less-predictive or unhelpful items (e.g., the distress item). Future research should aim to identify the best combination of screener items.

The results of the present study should be interpreted in the context of the study's limitations. First, the clinician assessments took place over the phone and BMI measurement was reliant on participant self-report, which may be less accurate or less thorough than in-person interviews and assessments. However, phone-based assessment does limit the biases that may inappropriately influence clinician diagnoses (e.g., individuals who appear to be higher weight are less likely to receive an ED diagnosis) (23). We had an unusually high rate of LOC compared with other similar studies that may have been the result of our advertising methods, which included wording on both weight loss and binge eating. Additionally, participants were not asked what their primary motivation was for seeking treatment, which may have allowed us to characterize the sample in greater detail. In addition, we did not assess race/ethnicity during the initial interest survey, which may influence how binge eating is experienced (24). The current study included a sample of individuals with overweight or obesity who were seeking outpatient weight-loss or binge-eating treatment; therefore, these results may not generalize to individuals with a normal or underweight BMI, individuals with more restrictive eating pathology, or individuals seeking higher levels of care.

Conclusion

In summary, our self-report screener demonstrated satisfactory initial predictive ability, which is notable given the challenges of discriminating between binge eating and normative overeating. However, room for improvement remains, and future research should explore additional screener items that distinguish between binge eating and overeating in treatment-seeking individuals with overweight or obesity and more fully capture the binge-eating experience in males.○

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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References

1. Palavras MA, Hay P, Filho CA, et al. The efficacy of psychological therapies in reducing weight and binge eating in people with bulimia nervosa and binge eating disorder who are overweight or obese—a critical synthesis and meta-analyses. Nutrients 2017;9:299. doi:10.1016/j.neurobiolaging.2014.02.011
2. Villarejo C, Fernandez-Aranda F, Jimenez-Murcia S, et al. Lifetime obesity in patients with eating disorders: increasing prevalence, clinical and personality correlates. Eur Eat Disord Rev 2012;20:250–254. [PubMed: 22383308]
3. Dawes AJ, Maggard-Gibbons M, Maher AR, et al. Mental health conditions among patients seeking and undergoing bariatric surgery: a meta-analysis. JAMA 2016;315:150–163. [PubMed: 26757464]
4. Chamay-Weber C, Combescure C, Lanza L, et al. Screening obese adolescents for Binge Eating Disorder in primary care: the adolescent Binge Eating Scale. J Pediatr 2017;185:68–72. [PubMed: 28285753]
5. Grupski AE, Hood MM, Hall BJ, et al. Examining the Binge Eating Scale in screening for binge eating disorder in bariatric surgery candidates. Obes Surg 2013;23:1–6. [PubMed: 23104387]
6. Hartmann AS, Gorman MJ, Sogg S, et al. Screening for DSM-5 other specified feeding or eating disorder in a weight-loss treatment-seeking obese sample. Prim Care Companion CNS Disord 2014;16. doi:10.1016/j.neurobiolaging.2014.02.011
7. Latner JD, Mond JM, Kelly MC, et al. The loss of control over eating scale: development and psychometric evaluation. Int J Eat Disord 2014;47:647–659. [PubMed: 24862351]
8. Weissman RS, Becker AE, Bulik CM, et al. Speaking of that: terms to avoid or reconsider in the eating disorders field. Int J Eat Disord 2016;49:349–353. [PubMed: 27084795]
9. Wever MCM, Dingemans AE, Geerets T, et al. Screening for binge eating disorder in people with obesity. Obes Res Clin Pract 2018;12:299–306. [PubMed: 29530586]
10. Cella S, Fei L, D'Amico R, et al. Binge eating disorder and related features in bariatric surgery candidates. Open Med (Wars) 2019;14:407–415. [PubMed: 31231682]
11. Darby A, Hay P, Mond J, et al. Disordered eating behaviours and cognitions in young women with obesity: relationship with psychological status. Int J Obes(Lond) 2007;31:876–882. [PubMed: 17130850]
12. Everett VS, Crochiere RJ, Dallal DH, et al. Self-report versus clinical interview: discordance among measures of binge eating in a weight-loss seeking sample [published online September 12, 2020]. Eat Weight Disord. doi:10.1016/j.neurobiolaging.2014.02.011
13. Chao H-L. Body image change in obese and overweight persons enrolled in weight loss intervention programs: a systematic review and meta-analysis. PLoS One 2015;10:e0124036. doi:10.1016/j.neurobiolaging.2014.02.011 [PubMed: 25946138]
14. Calugi S, Pace CS, Muzi S, et al. Psychometric proprieties of the Italian version of the questionnaire on eating and weight patterns (QEWP-5) and its accuracy in screening for binge-eating disorder in patients seeking treatment for obesity. Eat Weight Disord 2020;25:1739–1745. [PubMed: 31784945]
15. Bujang MA, Adnan TH. Requirements for minimum sample size for sensitivity and specificity analysis. J Clin Diagn Res 2016;10:YE01–YE06.
16. airburn C, Cooper Z, O'Connor M. Eating Disorder Examination (Edition 17.0D) https://www.credo-oxford.com/7.2.html. Published April 2014. Accessed July 1, 2020.

17. Berg KC, Peterson CB, Frazier P, et al. Psychometric evaluation of the eating disorder examination and eating disorder examination-questionnaire: a systematic review of the literature. Int J Eat Disord 2012;45:428–38. [PubMed: 21744375]

18. Grilo CM, Masheb RM, Lozano-Blanco C, et al. Reliability of the Eating Disorder Examination in patients with binge eating disorder. Int J Eat Disord 2004;35: 80–85. [PubMed: 14705160]

19. Vannucci A, Theim KR, Kass AE, et al. What constitutes clinically significant binge eating? Association between binge features and clinical validators in college-age women. Int J Eat Disord 2013;46:226–232. [PubMed: 23386591]

20. Klein KM, Forney KJ, Keel PK. A preliminary evaluation of the validity of binge-eating disorder defining features in a community-based sample. Int J Eat Disord 2016;49:524–528. [PubMed: 26607858]

21. Calugi S, Dalle GR. Psychological features in obesity: a network analysis. Int J Eat Disord 2020;53:248–255. [PubMed: 31657026]

22. Reslan S, Saules KK. College students' definitions of an eating "binge" differ as a function of gender and binge eating disorder status. Eat Behav 2011;12:225–227. [PubMed: 21741023]

23. Sonneville K, Lipson S. Disparities in eating disorder diagnosis and treatment according to weight status, race/ethnicity, socioeconomic background, and sex among college students. Int J Eat Disord 2018;51:518–526. [PubMed: 29500865]

24. Rodgers RF, Berry R, Franko DL. Eating disorders in ethnic minorities: an update. Curr Psychiatry Rep 2018;20:90. doi:10.1016/j.neurobiolaging.2014.02.011 [PubMed: 30155577]

Study Importance

What is already known?

▶ Although screening tools exist for loss-of-control or binge eating, such tools perform poorly in treatment-seeking individuals with overweight or obesity who may overendorse binge eating on self-report measures.

▶ The gold-standard assessment for loss-of-control or binge eating requires intensive time and training, and no effective short screening tools exist for treatment centers to triage individuals to appropriate treatment.

What does this study add?

▶ A brief screening tool that we created showed adequate sensitivity and specificity in predicting binge eating as determined by a clinician assessor.

How might these results change the direction of research or clinical practice?

▶ Our screening tool is the first step toward creating an effective short screening tool to distinguish between binge eating and overeating in treatment-seeking individuals with overweight or obesity.

TABLE 1

Standardized item-level canonical discriminant function coefficients for predicting clinician-assessed loss-of-control and full-threshold status

Self-report item	Any LOC	Full-threshold
Binge-eating/compensatory behavior items		
I felt I had lost control while eating.	**0.335**	**0.405**
I've experienced binge eating.	**0.435**	**0.509**
I felt unable (or it was difficult) to stop eating once I'd started.	0.157	0.105
I felt unable (or it was difficult) to prevent an episode of eating from starting.	**0.263**	0.202
I've made myself vomit, taken laxatives, and/or fasted more than 24 hours in order to control my weight or to try to make up for an overeating episode.	0.133	**0.238**
Binge-eating/overeating features		
Have you typically eaten much more rapidly than normal?	0.036	0.101
Have you typically eaten until you felt uncomfortably full?	−0.051	−0.098
Have you typically eaten large amounts of food when you haven't felt physically hungry?	0.149	−0.022
Have you typically eaten alone because you felt embarrassed about how much you were eating?	0.108	0.009
Have you typically felt disgusted with yourself, depressed, or very guilty?	0.110	0.080
Distress.	−0.244	−0.066
General overeating items		
I didn't really notice how much I ate; I ate mindlessly.	0.110	0.153
I liked the taste of the food, so I kept eating.	0.007	0.175
I ate more than I intended to.	−0.021	−0.076
I felt regretful about how much I ate.	0.132	−0.094

"Any LOC" represents endorsing any loss-of-control eating over the past 3 months (clinician interview); "full-threshold" represents the subset of these individuals who endorsed at least 12 objective binge-eating episodes over the past 3 months (clinician interview). The top three predictive items are bolded in each column.

TABLE 2

Standardized item-level canonical coefficients for predicting clinician-assessed loss-of-control and full-threshold status by gender

	Any LOC		Full-threshold	
	Females	**Males**	**Females**	**Males**
Binge-eating/compensatory behavior items				
I felt I had lost control while eating.	**0.344**	0.145	**0.439**	0.092
I've experienced binge eating.	**0.465**	0.338	**0.597**	0.242
felt unable (or it was difficult) to stop eating once I'd started.	0.101	0.271	−0.002	0.217
felt unable (or it was difficult) to prevent an episode of eating from starting.	0.219	0.343	0.139	**0.455**
I've made myself vomit, taken laxatives, and/or fasted more than 24 hours in order to control my weight or to try to make up for an overeating episode.	0.096	0.124	**0.169**	0.212
Binge-eating/overeating features				
Have you typically eaten much more rapidly than normal?	0.062	−0.130	0.074	0.073
Have you typically eaten until you felt uncomfortably full?	−0.145	**0.553**	−0.159	0.275
Have you typically eaten large amounts of food when you haven't felt physically hungry?	0.226	−0.038	0.033	−0.205
Have you typically eaten alone because you felt embarrassed about how much you were eating?	0.055	**0.404**	−0.059	**0.417**
Have you typically felt disgusted with yourself, depressed, or very guilty?	0.175	−0.123	0.054	0.146
Distress.	**−0.311**	−0.180	−0.065	−0.220
General overeating items				
didn't really notice how much I ate; I ate mindlessly.	0.057	0.334	0.101	0.353
liked the taste of the food, so I kept eating.	−0.066	0.241	0.143	0.345
ate more than I intended to.	−0.071	**0.412**	−0.182	**0.561**
felt regretful about how much I ate.	0.222	−0.107	0.000	−0.154

"Any LOC" represents endorsing any loss-of-control eating over the past 3 months (clinician interview); "full-threshold" represents the subset of these individuals who endorsed at least 12 objective binge-eating episodes over the past 3 months (clinician interview). The top three predictive items are bolded in each column.