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I Didn't Want Them to See: Secretive Eating among Adults with Binge-Eating Disorder

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Abstract

Objective: Secretive eating is characterized by eating furtively and concealing the act and evidence of eating. Among youth, secretive eating is common and associated with eating-disorder psychopathology. Yet, secretive eating among adults, including adults with eating disorders, is relatively unexplored.

Method: We assessed secretive eating among treatment-seeking adults with binge-eating disorder (BED) and examined demographic and clinical characteristics of patients with and without secretive eating. Patients (N=755) were assessed for BED, eating-disorder psychopathology, and depression by trained doctoral clinicians using established interviews and self-report measures; height and weight were measured.

Results: 54% of patients reported secretive eating distinct (i.e., separate) from objective binge episodes. A significantly greater proportion of women than men endorsed secretive eating; age, race, and education did not significantly differ. Patients with and without secretive eating did not significantly differ in BMI, objective binge-eating episodes, overeating episodes, or restraint. Patients with secretive eating endorsed significantly more subjective binge-eating episodes, greater eating concerns, shape concerns, and weight concerns, and had higher depression scores than patients without secretive eating. Patients with secretive eating were significantly more likely to have overvaluation of shape/weight than patients without secretive eating. Results remained the same after adjusting for sex, race, and BMI.

Discussion: Findings suggest that, among patients with BED, secretive eating reflects greater eating-disorder psychopathology but not increased frequency of objective binge-eating episodes or greater BMI. Understanding secretive eating can to inform determination of eating-disorder severity contribute to treatment formulation and planning.

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Introduction

Secretive eating is a problematic pattern of eating in which individuals eat furtively, for example, concealing the act or evidence of eating. Secretive eating has received little scholarly attention despite recognition by family members (Tester, Lang, & Laraia, 2016) and clinicians (Fairburn, Cooper, Doll, & Davies, 2005; Marcus & Kalarchian, 2003; Wilfley, Schwartz, Spurrell, & Fairburn, 2000) that it is problematic. Having a secretive nature associated with eating is one of five possible behavioral indicators of loss of control in the diagnostic criteria for binge-eating disorder (BED): "eating alone because of feeling embarrassed about how much one is eating" (American Psychiatric Association, 2013). Yet, binge eating is related *and* conceptually distinct from secretive eating. Secretiveness is not experienced by all individuals with BED, but has strong predictive value identifying cases of binge eating versus controls (White & Grilo, 2011). Moreover, eating episodes can be secretive even when they are not binges. Therefore, in research and practice, it is useful to assess for the presence of secretive eating and important to clarify whether binge-eating episodes are precluded when quantifying frequencies of secretive eating in practice and in research (e.g., Fairburn & Beglin, 1994; Fairburn & Cooper, 1993).

Among youth, secretive eating is relatively common (Kass et al., 2017; Knatz, Maginot, Story, Neumark-Sztainer, & Boutelle, 2011; Marcus & Kalarchian, 2003; Sonneville et al., 2013) and associated with eating-disorder psychopathology (Fairburn et al., 2005; Ganley, 1989; Kass et al., 2017) and general psychopathology such as depression (Kass et al., 2017; Knatz et al., 2011). In particular, secretive eating has been conceptualized as a clinical manifestation related to binge eating (Marcus & Kalarchian, 2003) and emotional eating (Ganley, 1989). Secretiveness is also conceptually related to shame and empirically related to binge/purge behaviors in bulimia nervosa (Kass et al., 2017; Murray et al., 2015). Because of these associations, previous work has suggested that secretive eating might be an early indicator that individuals may develop codified eating-disorder psychopathology (Fairburn et al., 2005; Kass et al., 2017; Marcus & Kalarchian, 2003).

Despite the clinical relevance of secretive eating among youth, this pattern of eating has received only minimal research attention among adults, including adults with eating disorders. In one qualitative study of families with food insecurity, parents reported that their children ate in secret and also hid or hoarded food; parents also disclosed that they engaged in secretive eating themselves (Tester et al., 2016). In a two-year prospective study of dieters considered at increased risk for developing an eating disorder, secretive eating was found to be one signal of future eating-disorder psychopathology (Fairburn et al., 2005). Another study aimed to characterize clinical features of adults with BED – including secretive eating – using an aggregated treatment-seeking sample (Wilfley et al., 2000). Secretive-eating episodes were more frequent among adults with BED than adults with anorexia nervosa or bulimia nervosa, who in turn had more frequent secretive eating than healthy controls (Wilfley et al., 2000).

Given the minimal empirical research on secretive eating among adults and the potential overlap between secretive eating and binge eating, the current study aimed to examine differences between adults with and without secretive eating in a large sample of treatment-

seeking patients with BED. Examining secretive eating within treatment-seeking patients with BED can help inform clinicians' conceptualization of eating-disorder psychopathology and treatment planning and can help inform directions for future clinical research. Based on earlier research with youth and comparing adults with and without BED, we hypothesized that adults who reported secretive eating would have more severe psychopathology (i.e., dietary restraint, eating concerns, weight concerns, shape concerns, depression, and objective and subjective binge-eating episodes) than adults with BED without secretive eating.

Methods

Participants

Participants (N=755) responded to advertisements for pharmacological and psychological treatment studies for BED (Grilo, 2017; Grilo, Masheb, & Salant, 2005; Grilo et al., 2014; Grilo, Masheb, & Wilson, 2005; Grilo, Masheb, Wilson, Gueorguieva, & White, 2011; Grilo, White, Gueorguieva, Barnes, & Masheb, 2013). All research was conducted at one location that used consistent recruitment strategies, inclusion criteria, and assessment protocols. All participants were evaluated using a consistent, interview-based assessment of eating-disorder variables including secretive eating, binge-eating episodes and BED diagnosis. Studies took place at an urban, medical-school based program located in the northeastern United States. Participants were between 18 and 65 years old and met *DSM-IV* research criteria for BED (American Psychiatric Association, 2000). Of note, *DSM-IV* criteria were more stringent than formal BED diagnostic criteria in the *DSM-5* (American Psychiatric Association, 2013), which specify weekly binge-eating episodes for a minimum duration of 3 months. Therefore, all participants who met *DSM-IV* criteria would also meet *DSM-5* criteria. Participants were excluded if they had a severe mental illness that could interfere with clinical assessment (e.g., psychosis), had medical conditions that influenced eating/weight, were receiving outside treatment for eating/weight concerns, were taking medications that could influence eating/weight, or were pregnant.

Participants were primarily female (n=560; 74.2%) and White (n=580, 76.8%). Overall, participants had a mean age of 45.75 (SD=9.80; range 18 to 65 years) and a mean BMI of 38.15 kg/m^2 (SD=6.84; range 19.7 to 65.0 kg/m^2). Participants had varying levels of education: high school or less than high school (n=144, 19.1%), some college (n=264, 35.2%), or a college degree (n=344, 45.8%).

This study received ethical approval from the Yale Human Investigations Committee; all participants provided written informed consent prior to study assessments.

Measures

Doctoral-level research clinicians, trained and monitored to maintain reliability, evaluated participants. Research clinicians administered the Structured Clinical Interview for *DSM-IV* Axis I Disorders (First, Spitzer, Gibbon, & Williams, 1997) to determine BED diagnosis, and the semi-structured Eating Disorder Examination interview (Fairburn & Cooper, 1993) to confirm BED diagnosis and characterize eating-disorder psychopathology. Research

clinicians measured participants' height and weight and calculated body mass index (BMI; kg/m^2).

Eating Disorder Examination (EDE).—The EDE (Fairburn & Cooper, 1993) is an investigator-based interview that evaluates eating-disorder psychopathology in the past 28 days, and over longer intervals corresponding to diagnostic criteria. The EDE also assesses frequencies of three types of eating episodes: objective binge-eating episodes (OBEs, eating an unusually large amount of food while perceiving a loss of control over eating; this corresponds to the *DSM-5* definition of binge-eating episodes), subjective binge-eating episodes (SBEs, eating a small or typical amount of food while perceiving a loss of control) and objective overeating episodes (OOEs, eating an unusually large amount of food without perceiving a loss of control). Secretive eating episodes are assessed using a frequency scale for the previous 28 days: 0=0 episodes, 1=1 to 5 days, 2=6 to 12 days, 3=13 to 15 days, 4=16 to 22 days, 5=23 to 27 days, 6=28 days. The EDE provides the assessor with language to guide the patient to exclude OBEs and OOEs from secret eating episodes: "Outside the times when you have eaten large amounts of food, over the past four weeks have you eaten in secret?" Positive responses are queried for the number of days that included at least one episode of secret eating. EDE instructions provide further guidance for the interviewer to conceptualize secretive eating as furtive eating that patients attempt to conceal because they wish not to be seen eating (proscribing furtive eating due to a desire not to be interrupted or pressured to share) (Fairburn & Cooper, 1993).

Participants scoring ≥1 on secretive eating were classified as the "with secretive eating" group; participants who reported 0 episodes of secretive eating in the past 28 days were classified as the "without secretive eating" group.

Four subscales (Restraint, Eating Concern, Shape Concern, and Weight Concern) and a Global severity score comprise the EDE interview and reflect eating-disorder psychopathology. For the current study analyses, the Eating Concern subscale of the EDE did not include the secretive eating item. Two items on the EDE assess overvaluation of weight and overvaluation of shape; the overvaluation construct is a core cognitive feature of eating disorders including BED (Grilo, 2013) and involves undue emphasis of weight or shape in an individual's self-evaluation. Ratings reflect the modal severity for the past 28 days and 4 is considered to be the clinical cut-point (Fairburn & Cooper, 1993; Goldschmidt et al., 2010; Grilo et al., 2008). The EDE is a well-established interview for assessing eating disorders with good inter-rater and test-retest reliability in BED (Grilo, Masheb, Lozano-Blanco, & Barry, 2004). EDE items in the current study were internally consistent (α=.81), with excellent inter-rater reliability (intraclass correlation coefficients .78 to .94).

Beck Depression Inventory (BDI).—The BDI is a well-established measure of depression (Beck & Steer, 1987) with excellent psychometric properties (Beck, Steer, & Carbin, 1988) that captures a broad range of negative affect. In the current study, internal consistency was excellent, α=.89.

Statistical Analyses

To evaluate differences between patients categorized with and without secretive eating, chi-square tests (categorical variables) and analyses of variance (ANOVAs; continuous variables) compared groups. Square-root transformation was applied to OBE, SBE, and OOE variables prior to analyses to meet the assumption of normality. Analyses of covariance (ANCOVAs) adjusted for sex, race/ethnicity and BMI. Partial eta-squared (η_p^2), an effect-size measure that describes the proportion of the total variance attributable to each independent variable, was calculated. Partial eta squared (η_p^2) values are considered small at .01, medium at .06, and large at .14 (Cohen, 1988).

Results

Differences in Demographic Variables

Just over half of the study group of patients with BED reported secretive eating (n=411, 54.4%). Table 1 summarizes demographic characteristics of patients with and without secretive eating. A significantly greater proportion of women (57.3%) than men (46.9%) endorsed secretive eating, $\chi^2(1, N=752)=6.33$, p=.012, φ=.092. Age, race, and education did not significantly differ.

Differences in Clinical Characteristics

Table 2 summarizes baseline clinical characteristics of treatment-seeking patients with BED with and without secretive eating. Patients with and without secretive eating did not differ significantly in BMI, $F_{1,746}=2.97$, p=.085, η_p^2=.004, OBE frequency, $F_{1,750}=3.19$, p=.074, η_p^2=.004, or OOE frequency, $F_{1,749}=0.32$, p=.574, η_p^2<.001. Patients with secretive eating reported more SBEs than patients without secretive eating, $F_{1,750}=13.22$, p<.001, η_p^2=.017. Notably, not all patients who reported SBEs reported secretive eating: 24.2% (n=182) reported neither SBEs nor secretive eating, 21.1% (n=159) reported SBEs but not secretive eating, 23.3% (n=175) reported secretive eating but not SBEs, and 31.4% (n=236) reported both SBEs and secretive eating, $\chi^2(1, N=752)=8.71$, p=.003, φ=.108.

Several domains of eating-disorder psychopathology differed significantly between patients with and without secretive eating: EDE Global Severity, $F_{1,750}=130.06$, p<.001, η_p^2=.148, EDE Eating Concerns, $F_{1,741}=171.18$, p<.001, η_p^2=.188, EDE Shape Concerns, $F_{1,750}=57.76$, p<.001, η_p^2=.072, and EDE Weight Concerns, $F_{1,750}=53.49$, p<.001, η_p^2=.067. EDE Restraint did not significantly differ between groups, $F_{1,750}=2.66$, p=.104, η_p^2=.004.

More patients with secretive eating (n=304, 74.2%) endorsed clinical levels of shape/weight overvaluation than patients without secretive eating (n=189, 55.4%), $\chi^2(1, N=752)=29.18$, p<.001, φ=.197.

Patients with secretive eating endorsed greater BDI Depression than patients without secretive eating, $F_{1,745}=26.32$, p<.001, η_p^2=.034.

Results of ANCOVAs (with sex, race, and BMI as covariates) paralleled ANOVAs without attenuation of effect sizes (see Table 2). The pattern of significance findings was the same as

ANOVAs. OBEs and OOEs did not significantly differ, but individuals with secretive eating reported more SBEs than individuals without secretive eating. EDE Global, EDE Eating Concerns, EDE Weight Concerns, EDE Shape Concerns, and BDI Depression were all higher among individuals with secretive eating than without secretive eating. EDE Restraint did not significantly differ between groups.

Discussion

Our findings indicate that secretive eating is a common form of eating-disorder psychopathology experienced by more than half of treatment-seeking adults with BED. Importantly, our study provides new information that adults with BED *and* secretive eating have greater eating-disorder psychopathology overall, and specifically related to shape, weight, and eating concerns, as well as greater depression, compared with adults with BED who did not report engaging in secretive eating.

Earlier work has shown that the secretive feeling surrounding loss of control in binge-eating episodes is not universal among patients with BED and has high predictive value in identifying cases of BED (White & Grilo, 2011); findings from the current study support these earlier observations. Although patients with secretive eating outside of binge-eating episodes had higher eating-disorder psychopathology, it is important to note that OBEs, OOEs, and BMI did not significantly differ between patients with BED with and without secretive eating. This suggests that secretive eating is distinct from BED. Yet, secretive eating did point to more severe eating-disorder psychopathology (shape, weight, and eating concerns) compared with patients who did not report secretive eating. Together, these findings suggest that clinicians providing treatment to patients with BED may benefit from assessing for the presence of secretive eating to inform their determination of severity and their treatment planning.

Our findings extend the literature on secretive eating in two ways. First, we assessed adults, whereas the earlier literature focused primarily on youth. Our study shows that secretive eating among adults has the same clinical correlates (greater eating-disorder and general psychopathology) as secretive eating among youth (Kass et al., 2017; Knatz et al., 2011; Marcus & Kalarchian, 2003). Second, we examined correlates of secretive eating within one patient group, adults with BED. Previous work has observed greater secretive eating among patients with BED than patients with other eating disorders and healthy controls (Wilfley et al., 2000). Our study extends this understanding of secretive eating by showing that among patients with BED, those with secretive eating have more severe eating-disorder psychopathology than patients without secretive eating.

Strengths and limitations of the current study are described to provide a context to interpret our findings. The current study was cross-sectional, and therefore the direction of causality is uncertain. Earlier work suggests that secretive eating might be an early indicator of binge eating, but we cannot comment on whether treatment-seeking patients with BED and concurrent secretive eating had secretive eating prior to beginning BED treatment. It is possible that patients had secretive eating prior to binge eating, but it is also possible that secretive eating and binge eating developed concurrently. Likewise, we cannot comment on

whether the patients with BED without secretive eating had previous secretive eating that resolved, or never experienced secretive eating. Prospective research focused on patients with BED could help to clarify temporal relations between secretive and binge eating. The assessment tool we used to measure eating-disorder psychopathology including secretive eating and binge eating, the EDE interview, does not proscribe SBEs from secretive eating. Although we found some evidence for the distinctiveness of secretive eating, further research should investigate the overlap and characteristics of these two types of episodes and generate recommendations for the measurement, for example, whether patients and evaluators should be instructed to exclude all loss-of-control eating episodes from secretive eating. Additional strategies for assessment, including multiple informants, could also inform clinical-research recommendations.

We emphasize that our findings pertain to a group of patients with BED who sought treatment at an academic medical school. Generalizability to individuals with BED who do not seek treatment or who seek treatment in different clinical settings (Marques et al., 2011), or to those who do not wish to participate in treatment research, is uncertain. Additionally, participants were well-educated, primarily White, and primarily women; generalizability of our findings to groups with different demographic composition is uncertain. Finally, future research should also evaluate the relation of secretive eating to the severity of eating-disorder psychopathology among adults with other specific eating disorders, such as anorexia nervosa and bulimia nervosa, as well as subthreshold forms of these eating disorders, as our findings for BED do not apply to these other important groups.

Our findings suggest that, among adults with BED, secretive eating can be distinct from binge eating and that secretive eating, if present, appears to reflect a behavioral feature that is important because it signals more severe eating-disorder psychopathology. Future research should examine whether secretive eating has prognostic significance in BED treatments. For example, secretive eating is conceptualized to be related to feelings of shame, and investigation of the role of shame in BED and different forms of eating episodes could yield important clinical information. Recognizing whether patients eat secretively can help clinicians plan interventions during the treatment of BED. Within a cognitive-behavioral approach, for example, secretive eating can be included among the eating behaviors patients are asked to self-monitor and address while focusing on establishing regular eating patterns. Additionally, discussion of secretive eating behaviors could be addressed as part of cognitive restructuring procedures. Further research is needed to improve understanding of treatment-related needs, such as the influence of secretive eating on treatment-seeking and whether secretive eating predicts or moderates treatment outcomes.

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Table 1.

Demographic variables by secretive eating.

	Secret *n*=411	**No Secret *n*=341**	**X^2**	***N***	***p***	**φ**
Sex			6.33	752	.012	.092
Male	22.1%	30.2%				
Female	77.9%	69.8%				
Race/Ethnicity			1.05	752	.591	.037
White	77.1%	76.2%				
Black	15.1%	17.3%				
Hispanic	7.8%	6.5%				
Education			0.40	748	.820	.023
High School	18.3%	20.1%				
Some College	35.9%	34.5%				
College Degree	45.7%	45.4%				
	M (SD)	*M (SD)*	*F*	Total *df*	*p*	η_p^2
Age	46.28 (9.50)	45.20 (10.09)	2.29	752	.131	.003

Note. Percentages reflect the proportion of participants from one group (column) in the demographic category (row).

Table 2.

Analyses of variance and pairwise comparisons comparing individuals with and without secretive eating.

	Secret *n*=411	**No Secret *n*=341**	**ANOVA**				**ANCOVA (adj. sex, race, BMI)**	
	M (SD)	*M (SD)*	*F*	*N*	*p*	η_p^2	*p*	η_p^2
BMI	37.74 (6.49)	38.6 (7.15)	2.97	748	.085	.004	n/a	n/a
Episodes								
OBE	19.15 (13.56)	17.50 (12.00)	3.19	752	.070	<.001	.051	.005
SBE	9.10 (14.23)	5.83 (10.35)	13.22	752	**<.001**	.017	**<.001**	.020
OOE	3.52 (8.31)	3.74 (7.79)	0.32	751	.574	<.001	.728	.000
EDE Global Score	3.04 (0.88)	2.34 (0.80)	130.06	752	**<.001**	.148	**<.001**	.142
Restraint	1.92 (1.35)	1.76 (1.25)	2.65	752	.104	.004	.226	.002
Eating	2.80 (1.31)	1.59 (1.19)	171.18	744	**<.001**	.188	**<.001**	.189
Shape	3.99 (1.06)	3.37 (1.17)	57.76	752	**<.001**	.072	**<.001**	.066
Weight	3.50 (1.03)	2.96 (0.99)	53.49	752	**<.001**	.067	**<.001**	.063
Overvaluation	3.99 (1.62)	3.23 (1.79)	37.32	752	**<.001**	.047	**<.001**	.047
BDI	17.77 (9.09)	14.42 (8.66)	26.32	747	**<.001**	.034	**<.001**	.032

Note. Partial eta squared (η_p^2) values are considered small at .01, medium at .06, and large at .14 (Cohen, 1988). OBE, SBE, and OOE variables were square root-transformed to meet assumptions of normality. However, we report non-transformed means here to facilitate interpretation. The Eating Concern subscale of the EDE did not include the secretive eating item. BMI=Body Mass Index; OBE=Objective binge episode; SBE=Subjective binge episode; OOE=Objective overeating episode; EDE=Eating Disorder Examination; BDI=Beck Depression Inventory; BED=Binge eating disorder.