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High Self-reported Rates of Neglect and Emotional Abuse, by Persons with Binge Eating Disorder and Night Eating Syndrome

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Abstract

This study compared rates of self-reported childhood maltreatment in three groups diagnosed using semi-structured interviews: binge eating disorder (BED; $n = 176$), night eating syndrome (NES, $n = 57$), and overweight/obese comparison (OC, $n = 38$). We used the Childhood Trauma Questionnaire (CTQ) to assess childhood maltreatment and the Beck Depression Inventory-II to assess depression levels. Reports of maltreatment were common in patients with BED (82%), NES (79%), and OC (71%). The BED group reported significantly more forms of maltreatment above clinical cutpoints (2.4) than the OC (1.4) group but not the NES (1.8) group. The BED and NES groups reported more emotional abuse than the OC group. A higher proportion of the BED group reported emotional neglect and a higher proportion of the NES group reported physical neglect. Depression levels, which were higher in BED and NES than OC, were associated with higher levels of physical and emotional abuse and neglect. In conclusion, reported rates of physical and sexual abuse differed little across groups whereas reports of neglect and emotional abuse were higher in the BED and NES groups than in the OC group and were associated with elevated depression levels.

Keywords

obesity; binge eating; night eating; childhood maltreatment; abuse; depression

1. Introduction

Childhood maltreatment has been associated with a number of eating and weight related issues, including increased risk of eating disorders, obesity, and failed attempts at weight loss. Binge eating disorder (BED) and night eating syndrome (NES) represent two forms of disordered eating that are closely linked with obesity. The relationship between childhood maltreatment and these eating patterns is poorly understood.

The association between obesity and a broad range of forms of childhood maltreatment has been reported in at least four studies. The strongest link was provided by Lissau and Sorensen (1994) in a prospective study of a random sample of 9- and 10-y-old children. Those who were deemed “dirty and neglected” through teacher evaluations of general hygiene and family

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structure and support were 7.1 times more likely to be obese at age 20 than children who had not been neglected. Another prospective study found that children who experienced physical neglect were 4.7 times more likely to be obese and 4.8 times more likely to have an eating disorder in adolescence and early adulthood than children who did not face neglect (Johnson, Cohen, Kasen, & Brook, 2002).

In two studies, Felitti and colleagues have also reported an increased risk for adult obesity among those with histories of maltreatment. In a medical chart review, 60% of patients with a history of rape or sexual molestation were at least 50 lbs. overweight versus only 28% of those without such a history (Felitti, 1991). A later study, based on the Adverse Childhood Experiences (ACE) study, reported an increased relative risk (RR) for obesity by those who experienced a broad range of abuse and neglect. These RRs increased with the severity of the participants' adult degree of obesity, with a RR for a BMI of 30 – 40 kg/m² of 1.46 and a RR for a BMI > 40 kg/m² of 2.54 (Williamson, Thompson, Anda, Dietz, & Felitti, 2002).

Various forms of eating disorders have also been reported to be associated with childhood maltreatment, although the literature, which has focused mostly on sexual abuse, is quite mixed. The early view postulated that sexual abuse victims and eating disorder patients, most commonly bulimia nervosa (BN), shared similar features, so it seemed plausible that they were linked in some way (Welch & Fairburn, 1996; Everill & Waller, 1995; Wonderlich, Brewerton, Jolic, Dansky, & Abbott, 1997). A meta-analysis of 53 studies revealed a small, but significant relationship between childhood sexual abuse and eating disorders (Smolak & Murnen, 2002). Reports of sexual and physical abuse are not elevated in BN relative to other psychiatric problems, although they tend to be significantly greater than in non-psychiatric controls (Friedman, Wilfley, Welch, & Kuncie, 1997; Welch & Fairburn, 1996).

There is mixed evidence for the relationship between childhood maltreatment and BED. Yanovski and colleagues (1993) reported that 28% of 43 obese persons with BED had experienced sexual abuse compared to 19% of obese non-BED controls, which was not significantly different. Rates of sexual abuse did not differ by gender or severity of obesity. Fairburn and colleagues (1998) reported that rates of sexual and physical abuse were higher for those with BED (29% and 21%, respectively) than for a normal control group (11% and 10%). The rates of sexual abuse were comparable to the rates of persons with BN (35%) and general psychiatric controls (26%), while rates of physical abuse tended to be lower among those with BED than those with BN (32%) or other psychiatric conditions (29%). Grilo and Masheb (2001) also reported that a history of several forms of childhood maltreatment was two to three times more common among those with BED than in a normative sample. A history of childhood maltreatment, however, was unrelated to gender, binge eating behavior, and other disordered eating attitudes and behaviors, with the exception of emotional abuse, which was related to increased body dissatisfaction, depression, and lowered self-esteem.

Three studies have found rates of childhood maltreatment among persons seeking bariatric surgery comparable to those of the BN, BED, and general psychiatric groups previously reported. Two groups have each found that 23% of female bariatric surgery candidates reported sexual abuse (Larsen & Geenen, 2005; Wadden, Sarwer, Womble, Foster, McGuckin, & Schimmel, 2001). Grilo and colleagues (2005) reported a slightly higher rate of sexual abuse histories: 32% in a series of 340 bariatric surgery candidates. In their study of diverse forms of maltreatment, Grilo et al. also reported that 69% endorsed some form of childhood maltreatment, including: 49% emotional neglect, 46% emotional abuse, 32% physical neglect; and 29% physical abuse. They also reported that different forms of maltreatment were generally not associated with gender, BMI, or eating disorder features including binge eating, although emotional forms of abuse and neglect were associated with higher depression levels (Grilo,

Masheb, Brody, Toth, Burke-Martindale, & Rothschild, 2005), similar to their earlier findings among persons with BED (Grilo & Masheb, 2001).

The present study represents an addition to the literature by contrasting two different forms of disordered eating with a comparison group of overweight persons. The current study examined rates of diverse forms of childhood maltreatment in persons with NES, BED, and an overweight/obese comparison (OC) group without disordered eating. This is the first study of the frequency of childhood maltreatment in patients with NES and the first to contrast two different forms of disordered eating using an overweight/obese comparison group for context.

2. Methods

2.1. Participants

Participants were recruited using broad media advertisements (print, newspaper, radio, television, and website) seeking participants for research and treatment studies being conducted at medical schools. The advertisements ran separately and specifically targeted people who thought they had eating problems (binge eating or night eating) or general weight problems. After an initial screening, potentially eligible participants for the three study groups received a full assessment according to their group designation. Potential participants for the BED and NES study groups were offered treatments if they so desired and were eligible for specific protocols. Potential participants for the NES and control groups, but not the BED group, were offered modest subject payments for completing the assessment procedures. The study was approved by Institutional Review Boards at University of Pennsylvania and Yale University, and written informed consent was given by all participants.

Study inclusion required meeting full criteria for BED or NES, or neither. Exclusion criteria included pregnancy, use of psychotropic medications in the past three months, or current participation in an eating disorder or obesity treatment program. Participants meeting criteria for anorexia nervosa, bulimia nervosa or other severe current psychiatric problems requiring alternative immediate treatments (e.g., bipolar, psychosis, drug dependence) were excluded. Additional exclusions were diabetes mellitus, thyroid disease, or other endocrine or metabolic disorders. Additionally, NES and control participants could not be working a night shift or swing shift or have diagnosed obstructive sleep apnea. NES participants were also required to have memory of their night eating episodes, excluding those with only parasomnic eating events.

2.2. Procedures and assessments

All participants were assessed by trained and monitored research-clinicians. Table 1 summarizes the basic demographic characteristics for the three study groups (176 participants with BED, 57 participants with NES, and 38 control overweight/obese participants without BED/NES).

BED *DSM-IV* (APA, 1994) research criteria diagnoses were determined using the *Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I/P)*; First, Spitzer, Gibbon, & Williams, 1996) and confirmed by findings from the *Eating Disorder Examination Interview -- 12th Edition version (EDE)*; Fairburn & Cooper, 1993). The EDE (Fairburn & Cooper, 1993) assesses the frequency of different forms of overeating, including *objective bulimic episodes* (i.e., binge eating defined as unusually large quantities of food with a subjective sense of loss of control), as well as the number of days on which they occurred for the previous month. The EDE's definition of *objective bulimic episode* days corresponds to the *DSM-IV-TR* (APA, 1994) criteria for binge eating in the BED research criteria. The EDE also assesses eating/meal patterns and is comprised of four subscales: *dietary restraint, eating concern, weight*

concern, and *shape concern* (not used in the current study). The EDE is considered the best established method for the assessment of the features of eating disorders and is widely used in studies of BED (Grilo, Masheb & Wilson, 2001a; Grilo, Masheb & Wilson, 2001b). Psychometric studies of the EDE have demonstrated adequate internal consistency and good discriminative validity (Cooper, Cooper, & Fairburn, 1989; Rosen et al., 1990) and have reported good inter-rater and test-retest reliability (Grilo, Masheb, Lozano-Blanco, & Barry, 2004; Rizvi, Peterson, Crow & Agras, 2000).

NES research criteria were also determined using a semi-structured interview, the Night Eating Syndrome and History (NESHI, unpublished interview) plus the analysis of 10-day food and sleep diaries. The NESHI included questions about the schedule and amount of food intake throughout the 24-hour day, history of NES symptoms, sleeping routine, mood symptoms and life stressors, weight and diet history, and previous treatment strategies for NES. Detailed 24-hour food records were completed by participants for 10 consecutive days; only days 3-9 were included in the analyses (days 1-2 were practice days and day 10 lacked data for nighttime ingestions) (O'Reardon et al., 2004). Food data were analyzed by a research dietitian using Food Processor, version 8.0 (ESHA Research, Salem OR). The average daily percentage of food intake consumed after the evening meal (defined as the first meal initiated between 1700 hrs. and 2000 hrs.), was calculated to obtain the percentage of calories consumed after the evening meal. Participants with NES also completed the EDE interview to rule out the presence of anorexia nervosa or bulimia nervosa. Criteria for NES included the consumption of 25% or more of daily caloric intake after the evening meal, as averaged over the week of diary records, and/or three or more nocturnal ingestions (awakenings to eat) during the week. Participants wore wrist actigraphs (Actiwatch-L, MiniMitter, Sunriver, OR) to confirm their awakenings. Fifty-seven participants with NES were recruited (Table 1). Their average caloric intake after the evening meal was $37.3 \pm 11.3\%$, and they reported 8.0 ± 6.7 nocturnal ingestions per week. Lack of appetite in the morning, rated as < 30 on a visual analog scale (0 = not at all hungry -100 = extremely hungry) before the first meal or at 10:00AM (whichever came first), was also present in 61% of the sample.

The OC group ($N = 38$) completed the same assessment as the NES and BED groups. None of the OC subjects met BED or NES criteria; they consumed only $10.3 \pm 6.9\%$ of their caloric intake after their evening meal and reported no nocturnal ingestions.

2.3 Questionnaires

The *Childhood Trauma Questionnaire* (CTQ; Bernstein & Fink, 1998) is a self-report instrument that assesses five types of childhood maltreatment: emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect. Participants rate items about childhood experiences (defined as prior to age 18) on five-point Likert-type scales anchored "never true" to "very often true." Reliability and validity of the CTQ have been established, including measures of convergent and discriminate validity from structured interviews, stability over time, and corroboration using independent data (Bernstein & Fink, 1998; Bernstein et al., 2003; Walker et al., 1999). Established cut-points (Walker et al., 1998) and scoring rules (Bernstein & Fink, 1998; Bernstein et al., 2003) for each category of maltreatment (with sensitivity and specificity of greater than 0.85) were followed as in previous studies with other obese groups (Grilo & Masheb, 2001; Grilo, Masheb, Brody, Toth, Burke-Martindale, & Rothschild, 2005). These categories were used in our primary analyses which were augmented by dimensional scores.

The *Beck Depression Inventory- II* (BDI-II; Beck & Steer, 1987) is a 21-item inventory that assesses the cognitive, affective, and somatic symptoms of depression. There are four levels of categorical scores: 0-9 represents none to mild levels, 10-19 represents mild to moderate

levels, 20-29 represents moderate to severe levels, and 30-63 reflects severe levels of depressive symptoms.

2.4 Data Analyses

Descriptive statistics were used to define basic characteristics of the three groups, and chi-square analyses were used to test any differences in distribution of sex and race. Analysis of variance (ANOVA) was used to test for differences in remaining demographic variables. Chi-square analyses were used to test for differences in the proportion of patients classified as exceeding clinical cut-points for each of the five forms of childhood maltreatment. Univariate analyses of covariance (ANCOVAs) were used to test for group differences in reports of the childhood maltreatment variables; these analyses covaried for appropriate demographic or clinical variables that differed across groups.

3. Results

3.1. Comparison of Maltreatment across Groups

Table 1 summarizes demographic and basic clinical (BMI and BDI) characteristics for the three study groups. The three groups differed significantly in age, ethnicity, and BDI scores. The three groups did not differ significantly in gender or either BMI or highest lifetime BMI.

Table 2 summarizes reports of the different forms of childhood maltreatment reported across the three groups. As is evident in Table 1, reports of maltreatment were common across the three groups, with the BED group scoring above more clinical cut-points (2.4) than the OC group (1.4, $p < 0.01$), but not the NES group (1.8). A higher proportion of the BED and NES groups scored above clinical cut-points for a positive history of emotional abuse than the OC group. A higher proportion of the BED group reported emotional neglect than the other two groups, and a higher proportion of the NES group reported physical neglect than the BED group. For the overall sample, BMI was not significantly correlated with any of the CTQ dimensional scores. There were no differences between participants who met at least one cut-score for maltreatment ($N=217$) and those who met no cut scores ($N=54$) for current BMI or highest lifetime BMI.

Given the significant differences in BDI scores across the study groups, we examined the relationship between BDI scores and maltreatment further. The BDI-II total score was significantly correlated with each type of maltreatment (emotional abuse: $r = .30$, $p < 0.001$; physical abuse: $r = .18$, $p < 0.01$; sexual abuse: $r = .14$, $p = 0.02$; emotional neglect: $r = .27$, $p < 0.001$) with the exception of physical neglect ($r = .12$, $p = 0.05$).

Additionally, all participants were classified as having none, mild, moderate, or severe levels of depressed mood as described above. Those who endorsed none to minimal levels of depressed mood reported significantly lower rates of emotional abuse and emotional neglect than those in the groups with depressed mood (Figure 1). Those with none to minimal depressed mood reported significantly lower rates of physical abuse than the severely depressed participants, and lower rates of physical neglect than the moderately depressed participants.

Figure 2 summarizes the CTQ dimensional scores for the different forms of maltreatment across the three groups. ANCOVAs (controlling for age and ethnicity) revealed that the BED group had significantly higher levels of emotional neglect than the other groups, and the NES group had higher levels of physical neglect than the BED group.

Given significant group differences in BDI scores, a series of ANCOVAs were performed that also covaried for BDI. This strategy also seemed indicated given the observed correlations between BDI and CTQ scores described above. The pattern of findings remained essentially

unchanged except that when BDI was controlled for, physical neglect scores reported by the BED group were higher than those reported by the OC group ($p < 0.006$).

4. Discussion

This study provided the first report of levels of childhood maltreatment among persons with NES and compared these levels to those of persons with BED and non-treatment seeking overweight and obese individuals. Higher rates of neglect and emotional abuse were associated with BED and NES than among overweight and obese participants without disordered eating. Physical and sexual abuse, however, were not more common. Participants with BED showed strikingly higher reports of emotional neglect whereas physical neglect appeared to be more common in NES patients. Of note, all three groups reported very high rates of at least one type of maltreatment, ranging from 71% to 82% across groups, and those with BED met criteria for more different types of maltreatment than the OC group.

Childhood maltreatment rates in the BED and NES groups were generally higher than those reported in community samples (Walker et al., 1999), but were similar to those reported in previous studies of BED (Fairburn et al., 1998; Yanovski et al., 1993) and of bariatric surgery candidates (Grilo et al., 2005). As in Yanovski et al.'s study (1993) of BED and Grilo and colleagues' (2005) study of bariatric patients, BMI levels were not associated with childhood maltreatment. The BMIs of our three groups were in the obese range, leaving little variability to detect differences.

Higher levels of depressed mood were significantly correlated with most forms of maltreatment. Additional categorical analyses revealed that moderate to severe levels of depressed mood, which are commonly present among those with BED and NES (Allison, Grilo, Masheb, & Stunkard, 2005; Gluck et al., 2001; Napolitano et al., 2001; Yanovski et al., 1993), were significantly related to both emotional and physical abuse and neglect. Similarly, childhood maltreatment has been linked to a broad range of psychopathology (Battle et al., 2004; Fairburn, Doll, Welch, Hay, Davies, & O'Connor, 1998; Grilo & Masheb, 2002; Grilo, Sanislow, Fehon, Martino, & McGlashan, 1999; MacMillian et al., 2001; Welch & Fairburn, 1994). These collective findings, together with the emerging literature, support the view that childhood maltreatment may be strongly associated with increased psychosocial problems in general, but not specifically with weight or eating disorder symptomatology (Grilo & Masheb, 2001, 2002).

In the present study, reported rates of physical and sexual abuse differed little across groups whereas reports of emotional abuse and forms of neglect were higher in the BED and NES groups than in the OC group and were associated with elevated depression levels. One item in the physical neglect scale reads, "I didn't have enough to eat." One can speculate that lack of nourishment, along with the lack of attention to other physical needs could contribute to the NES eating pathology or represent the dietary deprivation that may trigger night eating in vulnerable individuals. Likewise, those with BED had a marked elevation in emotional neglect as well as elevated physical neglect scores (when depression score was covaried) relative to the OC group. These findings are broadly consistent with a CBT model that posits a lack of emotional support undermines self-esteem (a general precursor) and when coupled with physical neglect and lack of nourishment this triggers binge eating (Fairburn et al. 1993; p. 369). We emphasize, however, that the cross-sectional nature of our study precludes any statements regarding causality. These clinical speculations are offered solely to stimulate studies or to receive consideration in prospective longitudinal research which is needed to understand these relationships better.

Clinical lore suggests that childhood maltreatment may negatively influence treatment outcomes for obesity and eating disorders (Felitti & Williams, 1998) and there are hints of greater attrition and diminished benefits reported in some studies (e.g., Buser et al., 2004; King, Clark, & Pera, 1996). Critical reviews of the empirical literature conclude that such concerns have yet to be empirically established (Gustafson & Sarwer, 2004), and recent prospective studies with established assessment methods have reported that high levels of sexual abuse (Grilo, White, Masheb, Rothschild, & Burke-Martindale, 2006; Larsen & Geenen, 2005) and other forms of childhood maltreatment (Grilo et al., 2006) do not appear to represent negative prognostic indicators for bariatric surgery.

Our findings must be considered in the context of the strengths and weaknesses of our methods. As we emphasized above, this study was cross-sectional and no assumptions may be made about causation between these high levels of maltreatment and the manifestation of BED, NES, and obesity without disordered eating. Another limitation is our reliance on retrospective self-report accounts of childhood maltreatment that might be biased or inaccurate. We note, however, that the CTQ has received good psychometric support including strong concurrent validity based on corroboration with independent data (Walker et al., 1999). Moreover, self-report does potentially remove a barrier to honest self-closure of sensitive material. Importantly, our CTQ findings converge rather closely with other studies of similar eating problems that have assessed sexual abuse rates (Fairburn et al., 1998; Yanovski et al., 1993). Regardless of the verifiability of the memories of childhood maltreatment, the reports serve as useful descriptions of the current phenomenological status of the participants. The prognostic significance of childhood maltreatment for treatment outcomes for these problems also remains uncertain and is beyond the scope of our study.

Since our participants with BED were primarily Caucasian, and both the BED and NES groups were primarily female, these findings may not generalize to different groups with other characteristics. Given our recruitment methods, it is also possible that our findings may not generalize to community-based (non-clinical) populations who are uninterested in participating in research or treatment studies. For example, it is possible that persons who respond to such recruitment ads for studies may have experienced more childhood maltreatment or may have more severe forms of disordered eating than others in the community.

A critical avenue for future research concerns the question of factors that represent vulnerabilities or, conversely, serve as protectors against developing negative sequelae of maltreatment. One example of such research that has examined the role of intervening factors is that of Preti and colleagues (2006) who found that body image mediates sexual abuse experiences and disordered eating. In closing, more definitive prospective research is needed to address these issues both across diverse obese and disordered eating groups and for different treatment methods. Whether the reported abuse actually occurred is unlikely to be determined except by expensive longitudinal studies. One excellent model for these studies is the Dunedin Multidisciplinary Health and Development Study, a 32-year cohort study in New Zealand (e.g. Danese, Pariante, Caspi, Taylor, & Poulton, 2006), and we urge that such studies be undertaken. But whether or not the existing reports describe real events, they are data in their own right and may provide valuable information for prognosis.

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Figure 1.

Rates of childhood maltreatment across levels of depressed mood on the BDI - II. Wilks' $\lambda = 0.84$, $F(15) = 707.1$, $p < 0.001$. Different superscripts denote group differences using Bonferonni correction, * $p < 0.05$ and ** $p < 0.01$.

Figure 2.

Childhood Trauma Questionnaire (CTQ) dimensional scores displayed by group. ANCOVA controls for age and race. Wilks' $\lambda = 0.516$, $F(10, 514) = 20.2$, $p < 0.001$. Means are displayed above each bar. Different letters denote group differences using Bonferonni correction, ** $p < 0.001$. BED and comparison participants also differed on physical neglect when controlling for BDI score, $p = 0.006$ (Wilks' $\lambda = 0.534$, $F(10, 512) = 18.9$, $p < 0.001$).

Table 1
Demographic and descriptive information for participants.

Variable	BED (n = 176)		NES (n = 57)		OC (n = 38)		Chi-Square $\chi^2(df)$	p
	%		%		%			
Female	79		72		63		4.6 (2)	0.10
Race/Ethnicity	87 ^a		65 ^b		66 ^b		35.5 (8)	0.001
Caucasian	7		35		31			
Afr. American	3		0		3			
Latino/Hisp.								
ANOVA								
	Mean (SD)		Mean (SD)		Mean (SD)		F(2, 268)	p
Age (yrs.)	44.9 (9.1) ^a		43.5(11.3) ^{a,b}		39.6 (10.8) ^b		4.6	0.01
BMI (kg/m ²)	35.6 (7.6)		33.7 (7.5)		36.2 (6.0)		1.8	0.18
Highest BMI	37.8 (8.7)		36.0 (7.8)		38.3 (6.9)		1.2	0.31
BDI-II	17.5 (9.0) ^a		15.9 (10.6) ^a		4.9 (5.8) ^b		31.0	< 0.001

Note: BED is binge eating disorder, NES is night eating syndrome, and OC is the overweight/obese control group. BDI-II is the Beck Depression Inventory – II. Different superscripts denote group differences after post-hoc comparisons with Bonferroni corrections.

Table 2

Number and proportion (%) of participants at or above clinical cut-points for each form of maltreatment.

Group	BED N (%)	NES N (%)	OC N (%)
Emotional Abuse	94 (54%) ^a	29 (51%) ^a	12 (32%) ^b
Physical Abuse	55 (31%)	16 (28%)	8 (21%)
Sexual Abuse	50 (29%)	14 (25%)	7 (18%)
Emotional Neglect	120 (69%) ^a	5 (9%) ^b	4 (11%) ^b
Physical Neglect	87 (50%) ^a	37 (65%) ^b	21 (55%) ^{ab}
Any Maltreatment	145 (82%)	45 (79%)	27 (71%)

Note. Note: BED is binge eating disorder, NES is night eating syndrome, and OC is the overweight/obese control group. Different superscripts denote group differences by χ^2 (1), with a p-value of < 0.05.