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Indicators of clinical significance among women in the community with binge-eating disorder symptoms: Delineating the roles of binge frequency, body mass index, and overvaluation

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TITLE: Indicators of clinical significance ~~in binge eating disorder~~among women in the community with binge eating disorder symptoms: Delineating the roles of binge frequency, body mass index, and overvaluation ~~of weight/shape~~

RUNNING HEAD: Clinical Significance of Binge Eating Disorder Symptoms

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ABSTRACT

**Objective.** This study aimed to investigate the relative contributions of binge eating, body image disturbance, and body mass index (BMI) to distress and disability in binge eating disorder (BED). **Method.** A community sample of 174 women with ~~probable~~ BED-type symptomatology provided demographic, weight, and height information, and completed measures of overvaluation of weight/shape and binge eating, general psychological distress and impairment in role functioning. Correlation and regression analyses examined the associations between predictors (binge eating, overvaluation, BMI) and outcomes (distress, functional impairment). **Results.** Binge eating and overvaluation were moderately to strongly correlated with distress and functional impairment, whereas BMI was not correlated with distress and only weakly correlated with functional impairment. Regression analysis indicated that both overvaluation and binge eating were strong and unique predictors of both distress and impairment, the contribution of overvaluation to variance in functional impairment being particularly strong, whereas BMI did not uniquely predict functional impairment or distress. **Discussion.** The findings support the inclusion of overvaluation as a diagnostic criterion or specifier in BED and the need to focus on body image disturbance in treatment and public health efforts in order to reduce the individual and community health burden of this condition.

KEYWORDS: binge eating disorder, binge eating, body mass index, obesity, community, overvaluation



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The DSM stipulates that symptoms of mental disorders must be associated with either significant psychological distress or functional (role) impairment (in social, occupational, or other important spheres) (American Psychiatric Association, 2013). In support of the "clinical significance" of BED, research has demonstrated that quality of life (QoL) is markedly impaired among sufferers (for a review see Jenkins, Hoste, Meyer, & Blissett, 2011). Further, BED may be associated with greater QoL impairment in specific domains compared to people with other eating disorders (Mond, Owen, Hay, Rodgers, & Beumont, 2005). The reason for this could relate to the distress associated with binge eating, the binge eating itself, and/or the additional mental or physical health toll exerted by comorbid conditions (e.g., depression and obesity).

Understanding the determinants of psychological distress and disability in people who suffer from BED is important as this information informs decisions about the primary targets of treatment and public health (i.e., prevention and health promotion) interventions. Delineating the determinants of distress and role functioning impairment may also assist in the refinement of the diagnostic criteria of this relatively new eating disorder. Key factors likely include the core behavioral indicator of BED (binge eating), body image disturbance (which is widely viewed as a core feature of eating disorder psychopathology), and comorbid obesity.

In regards to binge eating frequency, studies have consistently found that binge eating on an at-least weekly basis is associated with significant psychosocial impairment (e.g., Mitchison, Hay, Slewa-Younan, & Mond, 2012), although greater binge eating frequency may be associated with higher levels of distress and disability and poorer treatment outcomes (Dakanalis, Colmegna, Riva, & Clerici, 2017). While the overvaluation of body weight and/or shape ("overvaluation") is not currently included as a diagnostic feature of BED, many individuals with BED experience overvaluation and there is good evidence that overvaluation



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is predictive of illness severity (Linardon, 2017) and treatment outcomes (Grilo, White, Gueorguieva, Wilson, & Masheb, 2013). On the other hand, overvaluation has also been recently found not to predict distress related to binge eating in a community sample (Klein, Forney, & Keel, 2016). Concerning the role of obesity, adults with BED in the general population are around 3 times more likely than people without eating disorders to be mild to moderately obese and 6.5 times more likely to be severely obese (Kessler et al., 2013). Given the known association between obesity and mental and physical health impairment (Wang, McPherson, Marsh, Gortmaker, & Brown, 2011), it is likely that comorbid obesity exacerbates distress and disability in BED.

While distress and disability associated with BED are likely to be multi-determined, little is known regarding the variance in these outcomes accounted for by body weight, binge eating and overvaluation and, to our knowledge, no study has considered the relative importance of these three variables in accounting for distress and disability among individuals with BED symptoms ~~recruited from a~~in a community sample. Research of this kind has the potential to inform treatment and public health efforts as well as refinements to diagnostic criteria.

The goal of the current study was, therefore, to determine the relative importance of binge eating frequency, BMI, and overvaluation in accounting for distress and disability among individuals in the community ~~with a probable~~who experience symptoms of BED ~~diagnosis~~. We hypothesized that binge eating, overvaluation, and BMI would each contribute uniquely and significantly to variance in psychological distress and functional impairment. Given the lack of similar prior research, no predictions were made as to the relative strength of these associations.

## METHOD

### Study Design and Sampling



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The study methods have been detailed in several previous reports (cf. Harrison et al, 2016). In brief, 748 women aged 18 to 79 years ($M$ = 40.23 $SD$ = 14.39) were recruited from websites and social media channels of non-government organizations with an interest in women's weight-related health problems, and- newspapers. Advertisements directed potential participants to an anonymous online survey, which took approximately 30 minutes to complete. The study was approved by the Australian National University Human Research Ethics Committee (2013/027).

Data for $n$ = 122 participants who had unacceptably high levels of missing data were excluded. Missing data was minimal among the remaining $n$ = 626 participants (< 0.01% for all variables) and no differences were observed between excluded and retained respondents with the exception that excluded respondents were older ($p < .05$).

**Measures**

**Demographic Information.** Demographic characteristics assessed included age, possession of private health insurance, and State/Territory of residence. BMI was derived from participants' self-reported height and weight.

**Eating Disorder Examination Questionnaire (EDE-Q).** Items from the EDE-Q (Fairburn & Beglin, 2008) were used to identify probable BED cases (see below) and to assess overvaluation. The EDE-Q includes 22 items assessing attitudinal aspects of eating disorder pathology, two of which assess overvaluation with (1) weight and (2) shape. Averaged scores across these two items were used to indicate overvaluation of weight/shape, scores ranging from 0 to 6, with higher scores indicating greater levels of overvaluation. Other items on the EDE-Q assess the frequency of eating disorder behaviors (e.g.,, binge eating).

**Kessler Psychological Distress Scale (K-10).** The K-10 (Kessler et al., 2002) was used to assess symptoms of general psychological distress. It was developed specifically for



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use in general population samples. Higher scores indicate greater distress. Cronbach's alpha for the K-10 in the probable BED sample in this study was .90.

**Clinical Impairment Assessment (CIA).** The CIA (Bohn & Fairburn, 2008) includes 16 items that measure impairment in role functioning in personal, cognitive, and social domains, perceived to result from eating disorder symptoms. A global score is calculated via the sum of scores, and ranges from 0 to 48, with higher scores indicating higher levels of impairment. Cronbach's alpha for the global score in the current study was .93.

**Physical Health Subscale, Medical Outcomes Study (12-item) Short-Form (SF-12 PCS).** The SF-12 is a generic measure of impairment in role functioning associated with physical and mental health problems (Ware, Kosinski, & Keller, 1996). Items assessing physical and mental impairment load onto physical (PCS) and mental (MCS) health component subscales, with lower scores indicating greater impairment (the MCS was not used in the current study given the strong correlation with K-10 scores, $r$ = -.77). Cronbach's alpha for the PCS in this study was .97.

**Identification of ~~Probable BED~~Symptomatic Cases**

~~Participants met an operational definition of "probable BED"~~Cases with BED-like symptoms were identified based on the following (EDE-Q) criteria: (i) endorsement of objective binge eating on at least 4 days in the past 4 weeks; and (ii) the absence of regular (≥ twice in the past 4 weeks) "extreme weight-control behaviors" (self-induced vomiting, misuse of laxatives or diuretics, extreme dietary restriction and excessive exercise) (cf. Harrison et al, 2016). Using this algorithm, $n$ = 174 (27.8%) participants were classified as ~~probable BED cases~~symptomatic cases.

**Statistical Analysis**

Pearson product-moment correlations ($r_p$) were computed to assess the relationship between key variables. Two multiple linear regressions, with simultaneous variable entry,



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were conducted to assess BMI, overvaluation, and binge eating frequency as predictors of K-10 and CIA scores. Demographic characteristics and the SF-12 PCS were entered as covariates (the SF-12 PCS was used as a covariate in order to control for the association between physical impairment and obesity). A significance level of $p > .10$ was used as the removal criterion.

## RESULTS

### Participant Characteristics

Participants ($n = 174$) ranged in age from 18 to 76 years ($M = 43$, $SD = 14$). The majority were born in Australia (91.4%), spoke English as their first language (96.0%), were residing in New South Wales or the Australian Capital Territory (82.0%), and had private health insurance (65.5%). Participants reported binge eating, on average, on 12.32 ($SD = 8.20$) of the past 28 days and scored, on average, 4.42 ($SD = 1.71$) on overvaluation, indicating moderate levels of overvaluation. Over half (60.9%) of participants were obese.

### Correlations

As seen in the correlations reported in Table 1, overvaluation was most strongly associated with psychological distress and functional impairment, followed by binge eating frequency. BMI on the other hand was modestly correlated with functional impairment but not with psychological distress.

[INSERT TABLE 1 ABOUT HERE]

### Predictors of Distress and Impairment ~~in BED~~

As can be seen in Table 2, overvaluation and binge eating frequency uniquely predicted psychological distress and functional impairment, with overvaluation being a relatively stronger predictor, whereas BMI did not predict either distress or functional impairment. Together with covariates, these models explained 28% of the variance in



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psychological distress and 51% of the variance in functional impairment. Post-hoc analysis indicated that the results were unchanged when the PCS was not included as a covariate in the regression models, with BMI again not uniquely predicting distress ($p = 0.998$) nor functional impairment ($p = 0.165$).

[INSERT TABLE 2 ABOUT HERE]

## DISCUSSION

We examined the relative importance of overvaluation, binge eating and BMI in accounting for variance in levels of distress and functional impairment among women with ~~a probable~~ BED-type symptoms ~~diagnosis~~ recruited from a community sample. The finding of overvaluation having a particularly strong association with these outcomes adds to the growing literature concerning the importance of this construct in relation to the diagnosis of BED, contributing to clinical significance above the core behavioral symptom of binge eating.

The current community-based findings support the need to target body image disturbance in both treatment interventions for BED as well as public health initiatives to reduce the individual and community health burden of binge eating. Concerning treatment implications, there has been a recent move to add weight loss as a key target in BED treatment (Berkman et al., 2015). ~~While t~~The current findings suggest that BMI does not uniquely contribute to distress and disability in women ~~with a probable BED diagnosis~~who regularly binge eat, ~~so that~~thus weight loss interventions may not be expected to significantly improve ~~quality of life associated with~~ these outcomes. On the other hand, ~~,~~ BMI may contribute to other aspects of impairment not assessed in this study (Rieger et al., 2005).

The current findings may also be helpful in informing refinements to diagnostic criteria for BED, the status of overvaluation among these criteria in particular. As we have



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argued elsewhere (Harrison et al, 2016), including overvaluation as a diagnostic criterion for BED would go some way to addressing concerns about the pathologizing of normative behavior (Frances, 2013). Arguably this would pre-empt the need for inclusion of additional criteria, such as the occurrence of "marked distress associated with binge eating", that were introduced in order to reduce the likelihood of false positive diagnoses. On the other hand, inclusion of overvaluation as a diagnostic criterion for BED may result in a significant proportion of individuals who do experience distress and impairment 'falling through the gaps'. Hence, others have argued for the inclusion of overvaluation as a diagnostic specifier for BED~~, rather than a diagnostic criterion~~ instead (Grilo et al, 2013; Linardon, 2017). Further, t~~T~~he association between binge frequency and levels of distress and disability observed in the current study supports the use of binge frequency as a severity specifier for BED.

A ~~potential~~ limitation of the current study was the failure to capture definitive cases of BED in this community sample, owing to the exclusion of assessment of ~~certain features currently included among the diagnostic criteria for BED, including~~ diagnostic criteria including distress ~~specifically~~ linked to binge eating and behavioral indicators of loss of control over eating (e.g., eating more rapidly than normal). Hence, any clinical implications of the current findings are necessarily tentative. On the other hand, the recruitment of participants from a community sample ~~may be considered~~is a strength of the current research, given that the vast majority of BED sufferers do not seek treatment (Hart, Granillo, Jorm, & Paxton, 2011)~~distress and disability are strongly predictive of help seeking among individuals with eating disorders (Mond et al., 2009)~~. A second limitation of the current study is the omission of males. Given the almost equal gender distribution in BED (Hudson, Hiripi, Pope, & Kessler, 2007), it will be important to include males in future research of this kind.



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Table 1. Bivariate correlations ($r_p$) between study measures among participants ~~with probable~~ with BED~~-type~~ symptoms

| | Binge eating | BMI | Overvaluation | K-10 | CIA | PCS |
|---|---|---|---|---|---|---|
| Binge eating | - | | | | | |
| BMI | 0.12 | - | | | | |
| Overvaluation | 0.26** | 0.19* | - | | | |
| K10 | 0.31*** | 0.11 | 0.40*** | - | | |
| CIA | 0.42*** | 0.20** | 0.64*** | -0.71*** | - | |
| PCS | -0.16* | -0.46*** | -0.35*** | -0.41*** | -0.42*** | - |
| Age | 0.12 | 0.32*** | 0.10 | 0.06 | 0.03 | -0.41*** |

Note. BED = binge eating disorder; K-10 = Kessler Psychological Distress Sclae; CIA = Clinical Impairment Assessment; BMI = body mass index, PCS = physical component summary scale of the SF-12. *$p < .05$, **$p < .01$m ***$p < .001$



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Table 2. ~~Final m~~Multiple linear regression models where BMI, binge eating frequency, and overvaluation were entered as predictors of quality of life and distress scores in participants with ~~probable BED~~[3]BED-type symptoms

| Outcome | $R^2_{adj}$ | Predictors | B | SE (B) | β | ~~t~~T | p |
|---|---|---|---|---|---|---|---|
| **CIA**[b] | 0.51 | Overvaluation | 3.01 | 0.39 | 0.47 | 7.76 | < 0.001 |
| | | Binge eating frequency | 0.37 | 0.08 | 0.28 | 4.83 | < 0.001 |
| | | SF12 PCS | -0.25 | 0.06 | -0.27 | -4.01 | < 0.001 |
| | | Age | -0.11 | 0.05 | -0.14 | -2.28 | 0.024 |
| | | Private health insurance | 0.97 | 1.26 | 0.04 | 0.77 | 0.443 |
| | | State of residence | 0.18 | 0.54 | 0.02 | 0.33 | 0.741 |
| | | BMI | <0.01 | 0.07 | <0.01 | 0.05 | 0.959 |
| **K-10**[a] | 0.28 | SF-12 PCS | -0.24 | 0.06 | -0.36 | -4.35 | < 0.001 |
| | | Overvaluation | 1.13 | 0.35 | 0.24 | 3.24 | 0.001 |
| | | Binge eating frequency | 0.21 | 0.07 | 0.21 | 3.09 | 0.002 |
| | | Private health insurance | 1.92 | 1.13 | 0.11 | 1.70 | 0.092 |
| | | BMI | -0.09 | 0.06 | -0.11 | -1.44 | 0.151 |
| | | Age | -0.06 | 0.04 | -0.10 | -1.40 | 0.163 |
| | | State of residence | 0.30 | 0.49 | 0.04 | 0.61 | 0.541 |

Note. BED = binge eating disorder, B = unstandardized coefficients, SE (B) = standard error of B, CI = confidence interval, β = standardised coefficients. a. Kessler Psychological Distress Scale. b. Clinical Impairment Assessment. PCS = physical component summary scale of the SF-12. BMI = body mass index.



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ABSTRACT

**Objective.** This study aimed to investigate the relative contributions of binge eating, body image disturbance, and body mass index (BMI) to distress and disability in binge eating disorder (BED). **Method.** A community sample of 174 women with BED-type symptomatology provided demographic, weight, and height information, and completed measures of overvaluation of weight/shape and binge eating, general psychological distress and impairment in role functioning. Correlation and regression analyses examined the associations between predictors (binge eating, overvaluation, BMI) and outcomes (distress, functional impairment). **Results.** Binge eating and overvaluation were moderately to strongly correlated with distress and functional impairment, whereas BMI was not correlated with distress and only weakly correlated with functional impairment. Regression analysis indicated that both overvaluation and binge eating were strong and unique predictors of both distress and impairment, the contribution of overvaluation to variance in functional impairment being particularly strong, whereas BMI did not uniquely predict functional impairment or distress. **Discussion.** The findings support the inclusion of overvaluation as a diagnostic criterion or specifier in BED and the need to focus on body image disturbance in treatment and public health efforts in order to reduce the individual and community health burden of this condition.

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Understanding the determinants of psychological distress and disability in people who suffer from BED is important as this information informs decisions about the primary targets of treatment and public health (i.e., prevention and health promotion) interventions. Delineating the determinants of distress and role functioning impairment may also assist in the refinement of the diagnostic criteria of this relatively new eating disorder. Key factors likely include the core behavioral indicator of BED (binge eating), body image disturbance (which is widely viewed as a core feature of eating disorder psychopathology), and comorbid obesity.

In regards to binge eating frequency, studies have consistently found that binge eating on an at-least weekly basis is associated with significant psychosocial impairment (e.g., Mitchison, Hay, Slewa-Younan, & Mond, 2012), although greater binge eating frequency may be associated with higher levels of distress and disability and poorer treatment outcomes (Dakanalis, Colmegna, Riva, & Clerici, 2017). While the overvaluation of body weight and/or shape ("overvaluation") is not currently included as a diagnostic feature of BED, many individuals with BED experience overvaluation and there is good evidence that overvaluation



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The study methods have been detailed in several previous reports (cf. Harrison et al, 2016). In brief, 748 women aged 18 to 79 years ($M$ = 40.23 $SD$ = 14.39) were recruited from websites and social media channels of non-government organizations with an interest in women's weight-related health problems, and newspapers. Advertisements directed potential participants to an anonymous online survey, which took approximately 30 minutes to complete. The study was approved by the Australian National University Human Research Ethics Committee (2013/027).

Data for $n$ = 122 participants who had unacceptably high levels of missing data were excluded. Missing data was minimal among the remaining $n$ = 626 participants (< 0.01% for all variables) and no differences were observed between excluded and retained respondents with the exception that excluded respondents were older ($p < .05$).

**Measures**

**Demographic Information.** Demographic characteristics assessed included age, possession of private health insurance, and State/Territory of residence. BMI was derived from participants' self-reported height and weight.

**Eating Disorder Examination Questionnaire (EDE-Q).** Items from the EDE-Q (Fairburn & Beglin, 2008) were used to identify probable BED cases (see below) and to assess overvaluation. The EDE-Q includes 22 items assessing attitudinal aspects of eating disorder pathology, two of which assess overvaluation with (1) weight and (2) shape. Averaged scores across these two items were used to indicate overvaluation of weight/shape, scores ranging from 0 to 6, with higher scores indicating greater levels of overvaluation. Other items on the EDE-Q assess the frequency of eating disorder behaviors (e.g.,, binge eating).

**Kessler Psychological Distress Scale (K-10).** The K-10 (Kessler et al., 2002) was used to assess symptoms of general psychological distress. It was developed specifically for



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use in general population samples. Higher scores indicate greater distress. Cronbach's alpha for the K-10 in the probable BED sample in this study was .90.

**Clinical Impairment Assessment (CIA).** The CIA (Bohn & Fairburn, 2008) includes 16 items that measure impairment in role functioning in personal, cognitive, and social domains, perceived to result from eating disorder symptoms. A global score is calculated via the sum of scores, and ranges from 0 to 48, with higher scores indicating higher levels of impairment. Cronbach's alpha for the global score in the current study was .93.

**Physical Health Subscale, Medical Outcomes Study (12-item) Short-Form (SF-12 PCS).** The SF-12 is a generic measure of impairment in role functioning associated with physical and mental health problems (Ware, Kosinski, & Keller, 1996). Items assessing physical and mental impairment load onto physical (PCS) and mental (MCS) health component subscales, with lower scores indicating greater impairment (the MCS was not used in the current study given the strong correlation with K-10 scores, $r$ = -.77). Cronbach's alpha for the PCS in this study was .97.

**Identification of Symptomatic Cases**

Cases with BED-like symptoms were identified based on the following (EDE-Q) criteria: (i) endorsement of objective binge eating on at least 4 days in the past 4 weeks; and (ii) the absence of regular (≥ twice in the past 4 weeks) "extreme weight-control behaviors" (self-induced vomiting, misuse of laxatives or diuretics, extreme dietary restriction and excessive exercise) (cf. Harrison et al, 2016). Using this algorithm, $n$ = 174 (27.8%) participants were classified as symptomatic cases.

**Statistical Analysis**

Pearson product-moment correlations ($r_p$) were computed to assess the relationship between key variables. Two multiple linear regressions, with simultaneous variable entry, were conducted to assess BMI, overvaluation, and binge eating frequency as predictors of K-


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10 and CIA scores. Demographic characteristics and the SF-12 PCS were entered as covariates (the SF-12 PCS was used as a covariate in order to control for the association between physical impairment and obesity). A significance level of $p > .10$ was used as the removal criterion.

## RESULTS

### Participant Characteristics

Participants ($n = 174$) ranged in age from 18 to 76 years ($M = 43$, $SD = 14$). The majority were born in Australia (91.4%), spoke English as their first language (96.0%), were residing in New South Wales or the Australian Capital Territory (82.0%), and had private health insurance (65.5%). Participants reported binge eating, on average, on 12.32 ($SD = 8.20$) of the past 28 days and scored, on average, 4.42 ($SD = 1.71$) on overvaluation, indicating moderate levels of overvaluation. Over half (60.9%) of participants were obese.

### Correlations

As seen in the correlations reported in Table 1, overvaluation was most strongly associated with psychological distress and functional impairment, followed by binge eating frequency. BMI on the other hand was modestly correlated with functional impairment but not with psychological distress.

[INSERT TABLE 1 ABOUT HERE]

### Predictors of Distress and Impairment

As can be seen in Table 2, overvaluation and binge eating frequency uniquely predicted psychological distress and functional impairment, with overvaluation being a relatively stronger predictor, whereas BMI did not predict either distress or functional impairment. Together with covariates, these models explained 28% of the variance in psychological distress and 51% of the variance in functional impairment. Post-hoc analysis



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indicated that the results were unchanged when the PCS was not included as a covariate in the regression models, with BMI again not uniquely predicting distress ($p = 0.998$) nor functional impairment ($p = 0.165$).

[INSERT TABLE 2 ABOUT HERE]

## DISCUSSION

We examined the relative importance of overvaluation, binge eating and BMI in accounting for variance in levels of distress and functional impairment among women with BED-type symptoms recruited from a community sample. The finding of overvaluation having a particularly strong association with these outcomes adds to the growing literature concerning the importance of this construct in relation to the diagnosis of BED, contributing to clinical significance above the core behavioral symptom of binge eating.

The current community-based findings support the need to target body image disturbance in both treatment interventions for BED as well as public health initiatives to reduce the individual and community health burden of binge eating. Concerning treatment implications, there has been a recent move to add weight loss as a key target in BED treatment (Berkman et al., 2015). The current findings suggest that BMI does not uniquely contribute to distress and disability in women who regularly binge eat, thus weight loss interventions may not be expected to significantly improve these outcomes. On the other hand, BMI may contribute to other aspects of impairment not assessed in this study (Rieger et al., 2005).

The current findings may also be helpful in informing refinements to diagnostic criteria for BED, the status of overvaluation among these criteria in particular. As we have argued elsewhere (Harrison et al, 2016), including overvaluation as a diagnostic criterion for BED would go some way to addressing concerns about the pathologizing of normative



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behavior (Frances, 2013). Arguably this would pre-empt the need for inclusion of additional criteria, such as the occurrence of "marked distress associated with binge eating", that were introduced in order to reduce the likelihood of false positive diagnoses. On the other hand, inclusion of overvaluation as a diagnostic criterion for BED may result in a significant proportion of individuals who do experience distress and impairment 'falling through the gaps'. Hence, others have argued for the inclusion of overvaluation as a diagnostic specifier for BED instead (Grilo et al, 2013; Linardon, 2017). Further, the association between binge frequency and levels of distress and disability observed in the current study supports the use of binge frequency as a severity specifier for BED.

A limitation of the current study was the failure to capture definitive cases of BED in this community sample, owing to the exclusion of assessment of diagnostic criteria including distress linked to binge eating and behavioral indicators of loss of control over eating (e.g., eating more rapidly than normal). Hence, any clinical implications of the current findings are necessarily tentative. On the other hand, the recruitment of participants from a community sample is a strength of the current research, given that the vast majority of BED sufferers do not seek treatment (Hart, Granillo, Jorm, & Paxton, 2011). A second limitation of the current study is the omission of males. Given the almost equal gender distribution in BED (Hudson, Hiripi, Pope, & Kessler, 2007), it will be important to include males in future research of this kind.

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Table 1. Bivariate correlations ($r_p$) between study measures among participants with BED-type symptoms

| | Binge eating | BMI | Overvaluation | K-10 | CIA | PCS |
|---|---|---|---|---|---|---|
| Binge eating | - | | | | | |
| BMI | 0.12 | - | | | | |
| Overvaluation | 0.26** | 0.19* | - | | | |
| K10 | 0.31*** | 0.11 | 0.40*** | - | | |
| CIA | 0.42*** | 0.20** | 0.64*** | -0.71*** | - | |
| PCS | -0.16* | -0.46*** | -0.35*** | -0.41*** | -0.42*** | - |
| Age | 0.12 | 0.32*** | 0.10 | 0.06 | 0.03 | -0.41*** |

Note. BED = binge eating disorder; K-10 = Kessler Psychological Distress Sclae; CIA = Clinical Impairment Assessment; BMI = body mass index, PCS = physical component summary scale of the SF-12. *$p < .05$, **$p < .01$m ***$p < .001$

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Table 2. Multiple linear regression models where BMI, binge eating frequency, and overvaluation were entered as predictors of quality of life and distress scores in participants with BED-type symptoms

| Outcome | $R^2_{adj}$ | Predictors | B | SE (B) | $\beta$ | $t$ | $p$ |
|---|---|---|---|---|---|---|---|
| **CIA**[b] | 0.51 | Overvaluation | 3.01 | 0.39 | 0.47 | 7.76 | < 0.001 |
| | | Binge eating frequency | 0.37 | 0.08 | 0.28 | 4.83 | < 0.001 |
| | | SF12 PCS | -0.25 | 0.06 | -0.27 | -4.01 | < 0.001 |
| | | Age | -0.11 | 0.05 | -0.14 | -2.28 | 0.024 |
| | | Private health insurance | 0.97 | 1.26 | 0.04 | 0.77 | 0.443 |
| | | State of residence | 0.18 | 0.54 | 0.02 | 0.33 | 0.741 |
| | | BMI | <0.01 | 0.07 | <0.01 | 0.05 | 0.959 |
| **K-10**[a] | 0.28 | SF-12 PCS | -0.24 | 0.06 | -0.36 | -4.35 | < 0.001 |
| | | Overvaluation | 1.13 | 0.35 | 0.24 | 3.24 | 0.001 |
| | | Binge eating frequency | 0.21 | 0.07 | 0.21 | 3.09 | 0.002 |
| | | Private health insurance | 1.92 | 1.13 | 0.11 | 1.70 | 0.092 |
| | | BMI | -0.09 | 0.06 | -0.11 | -1.44 | 0.151 |
| | | Age | -0.06 | 0.04 | -0.10 | -1.40 | 0.163 |
| | | State of residence | 0.30 | 0.49 | 0.04 | 0.61 | 0.541 |

Note. BED = binge eating disorder, B = unstandardized coefficients, SE (B) = standard error of B, CI = confidence interval, β = standardised coefficients. a. Kessler Psychological Distress Scale. b. Clinical Impairment Assessment. PCS = physical component summary scale of the SF-12. BMI = body mass index.

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