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Research paper

Obsessive-compulsive symptoms in individuals with a history of eating disorders

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ABSTRACT

Background: OCD symptoms are well documented in anorexia nervosa (AN) and to a lesser extent in bulimia nervosa (BN), yet remain virtually unstudied in binge-eating disorder (BED).
Methods: In this cross-sectional observational study, 5927 participants with lifetime eating disorders (EDs) (i.e., past or current) were categorized into five groups based on their diagnostic histories: AN only ($n = 2330$), BN only ($n = 740$), BED only ($n = 665$), AN and another ED diagnosis (AN Mixed) ($n = 1293$), and BN and BED (BN-BED) ($n = 899$). Obsessive-Compulsive Inventory-12 scores were compared across these groups and with OCD ($n = 1040$), anxiety-related disorders (ANX) ($n = 423$), and non-clinical community (NCC) ($n = 1194$) cohorts.
Results: OCD symptoms were common among individuals with lifetime AN, BN, BED, and multiple EDs, with obsessing being the most prevalent dimension, followed by ordering, checking, and washing. The obsessing scale, which captures general intrusive thoughts rather than traditional OCD obsessions, was notably high. ED groups generally scored higher on the OCI-12 subscales than the ANX and NCC cohorts but lower than the OCD cohort, although ordering severity was higher in some ED groups. Positive correlations were found between ED symptoms and OCI-12 subscales, and gender-diverse individuals and men had greater OCD symptoms than women.
Conclusions: Clinicians should be vigilant for OCD symptoms in individuals with AN, BN, and BED. These findings call for research on the mechanisms linking EDs and OCD symptoms and support integrated treatment approaches for both conditions.

1. Background

Eating disorders (EDs) are serious, potentially life-threatening mental disorders with substantial comorbidity, including obsessive-compulsive disorder (OCD) (Arcelus et al., 2011; Mandelli et al., 2020). OCD is characterized by obsessions (intrusive thoughts that evoke distress) and/or compulsions (repetitive behaviors or mental acts that an individual feels compelled to perform to reduce anxiety or

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neutralize obsessions). OCD comorbidity in EDs has been associated with more severe ED symptoms, longer illness, reduced psychosocial functioning, and elevated risk of suicide attempts (Ahn et al., 2019; Milos et al., 2002; Wentz et al., 2001). In ED populations, approximately 13–23 % have a history of OCD and 8–13 % have both conditions concurrently (Drakes et al., 2021; Mandelli et al., 2020). While previous studies have focused on the diagnostic comorbidity between EDs and OCD, further investigation is needed to understand how OCD symptoms, particularly specific OCD symptom dimensions, manifest within ED populations.

1.1. OCD symptom dimensions in ED populations

OCD symptoms have been distilled into four main dimensions: contamination/cleaning, responsibility for harm/checking, symmetry/ordering, and forbidden/taboo thoughts (Abramovitch et al., 2021). Although some research has explored OCD symptomatology and dimensions in ED populations, the literature remains limited by several key factors, including diverse measurement tools (e.g., Hasler et al., 2005; Levinson et al., 2019a; Naylor et al., 2011), small sample sizes (e.g., Bastiani et al., 1996; Davies et al., 2009; Matsunaga et al., 1999a, 1999b, 1999c), and reliance on clinical OCD or non-clinical student samples (e.g., Danner et al., 2022; Roberts, 2006; Wu, 2008). These methodological limitations, coupled with inconsistent findings across studies, highlight the need for larger, well-powered studies to clarify how OCD dimensions present in ED populations, whether they differ across ED diagnoses, and their association with core ED symptoms such as dietary restraint, body dissatisfaction, or weight control behaviors. Evidence suggests that OCD symptoms may overlap the most strongly with ED psychopathology, followed by weight control behaviors, with a weaker link to binge eating (Drakes et al., 2021; Mandelli et al., 2020; Meier et al., 2020).

1.2. Prevalence of OCD in EDs

The literature suggests that OCD prevalence varies among ED diagnoses. Studies on diagnostic comorbidity indicate that individuals with AN and BN exhibit higher rates of OCD symptoms compared to the general population. Lifetime OCD is estimated at 20–25 % in AN and 12–15 % in BN, and current OCD affects 13–18 % of individuals with AN and 7–9 % with BN (Drakes et al., 2021; Mandelli et al., 2020). In contrast, OCD prevalence in BED is lower at 5 % for lifetime BED and 2 % for current OCD (Drakes et al., 2021). For reference, the prevalence of lifetime OCD in the general population is around 2 % (Ruscio et al., 2010). These findings suggest that OCD dimensions may differ across ED diagnoses, with individuals with AN and BN likely experiencing more severe symptoms than those with BED. This highlights the need for targeted research on OCD dimensions in relation to different ED diagnoses. Further, comparing OCD symptoms in ED populations with clinical and non-clinical controls is essential to fully contextualize the clinical implications of the results. The absence of control groups in previous BED studies makes it difficult to assess whether OCD symptom severity in this population is similar to or differs from that seen in the general population (Fichter et al., 2008; Grilo et al., 2009).

1.3. Gender differences in ED-OCD comorbidity

Gender differences in OCD symptoms in ED populations are underexplored (Springmann et al., 2020). Existing research has focused on females given the higher prevalence of EDs among women (Albert et al., 2001; Bastiani et al., 1996; Davies et al., 2009; Halmi et al., 2003; Jiménez-Murcia et al., 2007; Matsunaga et al., 1999b, 1999c, 1999a; Naylor et al., 2011). Leveraging the large cohort of the present study represents a unique opportunity to examine OCD symptoms across women, men, and gender-diverse individuals with lifetime EDs.

1.4. The present study

This study aimed to investigate obsessive-compulsive symptoms in an ED population using data from a large cohort with lifetime EDs (Bulik et al., 2021). The research objectives and hypotheses were as follows:

(1) **Objective 1:** *Describe and compare OCD dimensions (i.e., washing, checking, ordering, obsessing) within and across EDs.*

Hypothesis 1. Individuals with AN and/or BN would exhibit the most severe OCD symptoms, while those with BED would exhibit the least severe.

Exploratory research question: Are certain OCD dimensions more prominent in specific ED diagnoses?

(2) **Objective 2:** *Compare OCD symptom severity in an ED population to individuals with OCD, anxiety-related disorders, and non-psychiatric controls.*

Hypothesis 2. OCD symptoms in EDs will be higher than in non-psychiatric controls, similar to or lower than in OCD, and comparable to anxiety-related disorders.

Exploratory research question: Are certain OCD dimensions more pronounced in EDs compared to other psychiatric groups?

(3) **Objective 3:** *Examine associations between OCD dimensions and core ED symptoms in an ED population.*

Hypothesis 3. OCD dimensions will be most strongly associated with ED psychopathology, followed by weight control behaviors, with weaker associations with binge eating.

(4) **Objective 4:** *Explore gender differences in the manifestation of OCD symptoms in an ED population.* This objective was exploratory with no a priori hypotheses.

1.5. Significance of the present study

Understanding OCD symptoms in ED populations could provide insight into the cognitive-behavioral or neurobiological processes underlying comorbidity and inform more personalized interventions (Altman and Shankman, 2009).

2. Materials and methods

2.1. Participants

This cross-sectional observational study included individuals with lifetime EDs who enrolled in the United States arm of the Eating Disorders Genetics Initiative (EDGI) study between June 2020 and April 2023 (EDGI-US) (Bulik et al., 2021). EDGI is an international investigation exploring the contribution of genes and environment in AN, BN, and BED. These data represent the first data freeze, that occurred after recruitment and prior to the availability of a control group. Participants were included in EDGI-US if they were at least 15 years old, met Diagnostic and Statistical Manual (DSM-5) (American Psychiatric Association, 2013) criteria for a lifetime diagnosis of AN, BN, and/or BED assessed with the Eating Disorders 100,000 Questionnaire (ED100K) (Thornton et al., 2018), and had a United States mailing address. Participants who completed the Obsessive-Compulsive Inventory-Revised (OCI-R) and the Eating Disorder Examination Questionnaire (EDE-Q) were included. Individuals could exit the EDGI survey battery prematurely, explaining potential missingness.

EDGI is registered at ClinicalTrials.gov (NCT04378101). This manuscript was prepared according to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines (von Elm et al., 2007). The STROBE checklist is accessible in Online supplement

Appendix 1. A statistical analysis plan was developed and agreed to by the authors before the data were accessed. The sample size recruited in EDGI—the parent study—and hence this substudy, was determined in the study protocol and funding application (Bulik et al., 2021), and was not based on a priori hypotheses or power calculations for this specific substudy.

2.2. Procedure

The EDGI study recruited participants through engagement with clinicians and treatment centers, conventional media (television, radio, newspapers, press releases), and digital platforms (websites, Facebook, Twitter, Instagram, LinkedIn, podcasts). EDGI Ambassadors, including those with lived experience, parents, and clinicians, shared their stories and contributed to study launches, advertising, and educational resources on country-specific websites. US participants used the EDGI-US website to give informed consent and complete online surveys. Algorithms assessed individuals' eligibility, and those meeting the criteria provided a second consent to proceed with study questionnaires.

2.3. Measures

2.3.1. Demographic information

Participants self-reported age, gender, biological sex at birth, race, and ethnicity. Response options for gender included “man”, “woman”, “non-binary or gender fluid”, “two-spirit”, and “other”, and race and ethnicity were captured with the National Institutes of Health categories.

2.3.2. Eating disorder diagnosis and the ED100K

Lifetime ED diagnoses, including AN, BN, and BED, were assessed via self-report using the ED100K.v3 (version 3), which is based on DSM-5 criteria (Thornton et al., 2018). Adapted from the Structured Clinical Interview for DSM-5 (SCID) Eating Disorders module (Thornton et al., 2018), this instrument demonstrates strong convergent validity with the SCID Eating Disorders module (Thornton et al., 2018). The ED100K assesses only lifetime ED diagnoses.

Participants were categorized into distinct groups based upon their lifetime ED diagnoses: 1) AN (lifetime diagnosis of AN only), 2) AN Mixed (lifetime diagnosis of AN and either BN or BED), (3) BN (lifetime diagnosis of BN only), 4) BN-BED (lifetime diagnosis of BN and BED, but not AN), and 5) BED (lifetime diagnosis of BED only). These categorizations were designed to facilitate meaningful cross-diagnosis comparisons and address diagnostic crossover.

Current BMI (kg/m^2) was calculated from self-reported height and weight. The presence of current ED behaviors was captured by a “yes” response to questions assessing current fasting, binge eating, purging, vomiting, diuretics, diet pills and/or compulsive exercise.

2.3.3. Obsessive-Compulsive Inventory-12 (OCI-12)

In the present study, the OCI-12 was scored and analyzed (Abramovitch et al., 2021) using the OCI-R (Foa et al., 2002) data from the parent EDGI study. The 12-item OCI-12 measures OCD dimensions (washing, checking, ordering, and obsessing) and provides a total score (Abramovitch et al., 2021). Each subscale ranges from 0 to 12, and the total ranges from 0 to 48. An OCI-12 screening cutoff of 11 discriminates OCD patients from healthy controls with ≥80 % sensitivity and specificity (Abramovitch et al., 2021). The OCI-12 demonstrates convergent and divergent validity, and test-retest reliability (Abramovitch et al., 2021). Clinical severity is categorized as non-clinical to mild (0−12), moderate (13−21), and severe (22–48) (Abramovitch et al., 2021). Internal consistencies (α) were acceptable for the subscales (0.79 to 0.91) and total (α = 0.91) in this study.

2.3.4. Eating Disorder Examination Questionnaire (EDE-Q)

The EDE-Q 6.0 (28 items), a 28-item validated self-report questionnaire assessing ED symptoms over the previous 28 days and measured core ED symptoms in this study (Fairburn and Beglin, 2008; Fairburn and Cooper, 1993). It includes four subscales measuring ED psychopathology—dietary restraint, eating concern, shape concern, and weight concern—and a global score, all ranging from 0 to 6. A global score ≥ 2.8 indicates clinically significant symptoms (Mond et al., 2008; Velkoff et al., 2023). Questions also measure binge eating (question 14) and weight control behaviors including fasting (question 2), self-induced vomiting (question 16), laxative use (question 17), and driven exercise (question 18) frequency. One or more episodes of these behaviors indicated current ED behaviors. Internal consistency for the subscales and total in this study ranged from 0.82 to 0.95.

2.3.5. Patient Health Questionnaire (PHQ-9)

The Patient Health Questionnaire (PHQ-9) was used to assess depression symptoms (Kroenke et al., 2001). The score ranges from 0 to 27, with higher scores reflecting greater severity. A score above 10 suggests clinically significant symptoms (Kroenke et al., 2001). The PHQ-9 displays good internal consistency, test-retest reliability, and validity across populations and regions (Kroenke et al., 2001; Molebatsi et al., 2020). Internal consistency in the present study was excellent (α = 0.90).

2.3.6. Generalized Anxiety Disorder (GAD-7)

The Generalized Anxiety Disorder (GAD-7) was used to assess anxiety (Spitzer et al., 2006). The total score ranges from 0 to 21, with higher scores indicating more severe symptoms. A score above 10 indicates clinically significant symptoms. The GAD-7 shows good reliability and construct validity (Kroenke et al., 2007; Löwe et al., 2008; Spitzer et al., 2006). Internal consistency in the present study was high (α = 0.92).

2.4. Comparison groups

The comparison groups in the present study were a clinical OCD cohort (n = 1040), an anxiety-related disorders cohort (n = 423), and a non-clinical community cohort (n = 1194). These cohorts were not recruited for this study; their recruitment and details have been reported previously (Abramovitch et al., 2021). The OCD cohort included patients at treatment centers meeting DSM-IV criteria for primary OCD (American Psychiatric Association, 2000). The anxiety-related disorders cohort included individuals seeking treatment for primary DSM-IV or DSM-5 anxiety-related disorders, excluding OCD, with diagnoses of social anxiety disorder (23 %), generalized anxiety disorder (GAD) (22 %), panic disorder (18 %), anxiety disorder not otherwise specified (15 %), panic disorder with agoraphobia (12 %), trichotillomania (10 %), specific phobia (6 %), and post-traumatic stress disorder (2 %). The non-clinical community cohort included university students and medical center patients without OCD. As the control participants were not recruited as part of the ED research, they were not more likely to be relatives of ED patients. Published summary data, and unpublished summary data for men and women, were used (Abramovitch et al., 2021).

2.5. Statistical analysis

2.5.1. Main analyses

OCI-12 means, clinical severity categories, and the percent screening positive for OCD were calculated. Repeated measures mixed models (RMMMs) compared OCI-12 subscales within groups. OCI-12 differences among ED groups, gender groups, and cohorts, were evaluated using independent group t-tests and Cohen's d effect sizes. Logistic regression investigated whether ED groups differed in odds of screening positive for OCD, with age as a covariate due to age-related patterns in OCD screening (Cath et al., 2017). The associations between core ED symptoms and OCI-12 subscales were investigated with Pearson correlations. Missing data on EDE-Q subscales (<1 %), GAD-7 (6 %) and PHQ-9 (2 %)

was addressed with prorated scoring, then maximum expectation imputation. Gender had six missing responses. Complete case analysis was used. Analyses were conducted with SAS 9.4 (SAS Institute, Cary, NC, USA).

2.5.2. Power calculations and analysis details

Statistical power was estimated with G*Power 3, aiming for 80 % power and a large effect size with a two-tailed alpha of 0.05 (Faul et al., 2007). Large effect sizes were targeted for differences within ED groups on the OCI-12 subscales (RMMM), differences between groups on OCI-12 subscales (*t*-tests), and correlations between OCI-12 subscales and ED symptoms, as these were considered clinically meaningful. Based on a repeated measures analysis of variance power calculation, RMMMs required 10 participants. *t*-Tests required 52 participants, and correlation analyses required 29 participants. The sample size exceeded these requirements in many instances. To address Type I error inflation due to multiple tests and the large sample, we interpreted effect sizes alongside *p* values. Due to the infeasibility of correcting for multiple testing across many analysis families and subgroups, an alpha of 0.05 was used.

2.5.3. Gender differences

Gender differences were examined by repeating key analyses with gender as a main effect or stratified by men, women, and gender-diverse individuals (non-binary or gender fluid). Due to small sample sizes (i.e., $n = 22$), "two-spirit" and "other" groups were excluded. Men were further classified as cisgender or non-cisgender based on their responses to sex. There were too few non-cisgender women for subgroup analysis. The gender analyses also aimed to compare same-gender groups between the ED cohort (which had individual-level data) and other clinical and non-clinical cohorts (we only had access to summary-level data), where statistical control of gender was not possible.

2.5.4. Anxiety and depression comorbidity

The influence of comorbid anxiety and depression on the relationship between OCD symptoms and EDs was explored by repeating key analyses and incorporating PHQ-9 and GAD-7 as covariates.

3. Results

3.1. Sociodemographic and clinical characteristics

The ED cohort ($n = 5927$, mean age = 34.22 ± 13.16 years) included 89 % ($n = 5262$) women, 4 % men ($n = 254$), 6 % non-binary/gender fluid ($n = 383$), 0.4 % two-spirit/other genders ($n = 22$), and 0.1 % ($n = 6$) with missing responses. The majority identified as White ($n = 5173$; 88 %), followed by Asian ($n = 210$; 4 %), African American ($n = 171$; 3 %), Native American ($n = 39$; 0.7 %), Pacific Islander ($n = 5$; 0.1 %), more than one race ($n = 287$; 5 %), or missing race ($n = 26$; 0.4 %). Approximately 7 % ($n = 391$) were Hispanic.

Participants were categorized into five groups based on lifetime ED diagnoses: AN only ($n = 2330$; 39 %), BN only ($n = 740$; 12 %), BED only ($n = 665$; 11 %), AN and another ED ("AN Mixed", $n = 1293$; 22 %), and BN and BED ("BN-BED", $n = 899$; 15 %). Most reported clinically significant pathology (66 %, EDE-Q ≥ 2.8), with 73 % and 79 % reporting current ED behaviors on the ED100K and EDE-Q, respectively. Nearly two-thirds (64 %) had received ED treatment. The average age at symptom onset was 14.8 years ($SD = 4.58$). Many screened positive for major depression (63 %) and GAD (49 %). Mean PHQ-9 and GAD-7 scores indicated moderate symptoms (12.50 ± 6.94 and 9.91 ± 5.99).

3.2. Objective 1: OCD dimensions in the ED cohort

3.2.1. Continuous scores

Obsessing was the most severe OCD dimension in the ED cohort, followed by ordering, checking, and washing (Table 1). A RMMM revealed significance differences in OCI-12 subscale means, $F(3, 5926) = 1846.10$, $p < .001$. Post hoc comparisons revealed obsessing > ordering (within-subjects Cohen's d (d_{av}) = 0.23), ordering > checking ($d_{av} = 0.44$), and checking > washing ($d_{av} = 0.27$) ($ps < 0.001$). This pattern was consistent across ED groups and genders. Between-group comparisons of OCD dimensions indicated that the BED group had significantly lower scores than other ED groups, with predominantly small effect sizes (Table 2, Fig. 1). Other significant differences showed negligible effect sizes.

3.2.2. Clinical severity categories

Table 1 outlines OCI-12 severity categories. Approximately half of the ED (50 %), AN (49 %), AN Mixed (56 %), BN (51 %), and BN-BED (54 %) groups had 'moderate' or 'severe' symptoms, compared to 37 % of the BED group, which showed the highest percentage of 'non-clinical to-mild' symptoms (63 %).

3.2.3. Positive screens for OCD

The ED cohort had 57 % positive OCD screens (i.e., OCI-12 ≥ 11) (57 %), with the highest proportions in the BN-BED (62 %), AN Mixed (61 %), AN (57 %), and BN (59 %) groups, and the lowest in BED (45 %) (Table 1). Logistic regression (Supplementary Table 1) revealed AN Mixed, BN, and BN-BED groups were more likely than BED to screen positive, while the AN Mixed and BN-BED groups were more likely than AN (Tukey adjusted $ps < 0.05$). Multiple lifetime ED diagnoses were associated with higher odds of positive screens, specifically in the BN-BED and AN Mixed groups versus AN and BED (Tukey adjusted $ps < 0.05$).

3.3. Objective 2: comparing OCD dimensions across EDs, OCD, anxiety-related disorders, and non-clinical control cohorts

OCI-12 scores for the ED cohort were compared to those of the OCD, anxiety-related disorders, and non-clinical community control cohorts. The *t*-test results and effect sizes for these comparisons are presented in Supplementary Table 2 and discussed next.

3.3.1. ED vs OCD cohort

The OCD cohort scored significantly higher than the ED cohort, AN, AN Mixed, BN, BN-BED, and BED groups on all OCI-12 dimensions and the total, except for ordering, with effect sizes ranging from small to large (Fig. 2A).

3.3.2. ED vs anxiety-related disorders cohort

The ED cohort, AN, AN Mixed, BN, and BN-BED groups scored significantly higher than the anxiety-related disorder cohort on all OCI-12 dimensions and the total, with small to medium effect sizes (Fig. 2B). The BED group scored significantly higher than the anxiety-related disorders cohort on the total score, washing, and ordering dimensions; however, only ordering had a meaningful effect size.

3.3.3. ED vs non-clinical controls

The ED cohort and all ED groups scored significantly higher on all OCI-12 dimensions and the total than the non-clinical controls, with effect sizes ranging from small to large (Fig. 2C).

3.4. Objective 3: correlations between core ED symptoms and OCD dimensions in the ED cohort

All OCD dimensions exhibited significant positive correlations with core ED symptoms in the ED cohort, with mainly small to medium effect sizes (Fig. 3). Obsessing showed the most strongest association, whereas washing, checking, and ordering had smaller, similar associations. ED psychopathology correlated more strongly with OCD dimensions than ED behaviors. Significant associations between OCD dimensions and fasting, laxative use, driven exercise, and to a lesser extent, binge eating, were observed (Fig. 3).

Table 1
Descriptive statistics on the OCI-12 for the ED cohort.

ED history group	Gender	*N*	Total *M* (*SD*)	Washing *M* (*SD*)	Checking *M* (*SD*)	Ordering *M* (*SD*)	Obsessing *M* (*SD*)	OCI-12 benchmarks						Screened positive for OCD	
								Nonclinical-to-mild		Moderate		Severe			
								n	%	*n*	%	*n*	%	*n*	%
EDs	Total	5927	14.63 (10.52)	2.12 (2.94)	2.93 (2.97)	4.38 (3.59)	5.19 (3.76)	2949	50	1554	26	1424	24	3412	58
	Men	254	16.53 (11.55)	2.76 (3.30)	3.56 (3.25)	4.65 (3.55)	5.56 (4.02)	108	43	60	24	86	34	164	65
	Women	5262	14.13 (10.31)	2.01 (2.87)	2.82 (2.92)	4.29 (3.57)	5.01 (3.70)	2720	52	1370	26	1172	22	2925	56
	Gender-diverse	383	20.05 (11.03)	3.24 (3.35)	3.90 (3.24)	5.48 (3.66)	7.42 (3.66)	110	29	115	30	158	41	304	79
AN	Total	2330	14.45 (10.42)	2.20 (2.99)	2.92 (2.95)	4.33 (3.56)	5.00 (3.72)	1184	51	597	26	549	24	1334	57
	Men	84	17.23 (12.35)	2.91 (3.55)	3.61 (3.61)	5.01 (3.70)	5.70 (4.17)	36	43	17	20	31	37	54	64
	Women	2079	13.98 (10.18)	2.09 (2.92)	2.82 (2.89)	4.24 (3.55)	4.82 (3.66)	1093	53	531	26	455	22	1152	55
	Gender-diverse	151	19.34 (11.19)	3.27 (3.29)	3.86 (3.23)	5.24 (3.50)	6.98 (3.70)	47	31	44	29	60	40	118	78
AN Mixed	Total	1293	15.61 (10.84)	2.31 (3.04)	3.05 (3.07)	4.73 (3.61)	5.52 (3.84)	572	44	364	28	357	28	786	61
	Men	26	21.38 (10.82)	4.19 (3.42)	4.23 (2.90)	5.19 (3.43)	7.77 (3.82)	6	23	7	27	13	50	22	85
	Women	1177	15.03 (10.66)	2.17 (2.93)	2.94 (3.02)	4.63 (3.60)	5.29 (3.78)	543	46	331	28	303	26	689	59
	Gender-diverse	88	21.77 (11.02)	3.67 (3.77)	4.25 (3.48)	5.88 (3.69)	7.97 (3.62)	22	25	25	28	41	47	74	84
BN	Total	740	15.31 (11.05)	2.09 (2.99)	3.09 (3.09)	4.54 (3.78)	5.59 (3.87)	361	49	182	25	197	27	440	59
	Men	37	17.69 (11.95)	2.97 (3.24)	3.97 (3.22)	5.20 (3.49)	5.54 (3.92)	14	38	11	30	12	32	24	65
	Women	647	14.61 (10.76)	1.95 (2.90)	2.93 (3.04)	4.38 (3.73)	5.35 (3.81)	332	51	158	24	157	24	372	58
	Gender-diverse	52	21.92 (11.36)	3.08 (3.37)	4.35 (3.30)	6.04 (4.22)	8.46 (3.39)	14	27	12	23	26	50	41	79
BN-BED	Total	899	15.29 (10.39)	2.15 (2.90)	3.16 (2.98)	4.43 (3.58)	5.56 (3.70)	414	46	264	29	221	25	554	62
	Men	57	16.18 (10.81)	2.33 (2.82)	3.93 (3.17)	4.53 (3.70)	5.39 (4.03)	21	37	17	30	19	33	41	72
	Women	786	14.93 (10.25)	2.07 (2.87)	3.06 (2.94)	4.37 (3.59)	5.44 (3.64)	378	48	226	29	182	23	468	60
	Gender-diverse	55	19.04 (10.91)	3.02 (3.13)	3.62 (3.12)	5.09 (3.28)	7.31 (3.68)	15	27	21	38	19	35	44	80
BED	Total	665	11.71 (9.25)	1.50 (2.48)	2.23 (2.58)	3.69 (3.36)	4.29 (3.55)	418	63	147	22	100	15	298	45
	Men	50	12.36 (10.02)	2.08 (3.21)	2.42 (2.71)	3.50 (3.07)	4.36 (3.56)	31	62	8	16	11	22	23	46
	Women	573	11.18 (8.99)	1.38 (2.37)	2.13 (2.52)	3.57 (3.30)	4.11 (3.48)	374	65	124	22	75	13	244	43
	Gender-diverse	37	17.68 (9.56)	2.62 (2.78)	3.08 (2.68)	5.35 (3.96)	6.62 (3.58)	12	32	13	35	12	32	27	73

Note. The total sample comprises the entire ED cohort, encompassing individuals of all genders, including men, women, gender-diverse (i.e., nonbinary, gender fluid), two-spirit, and "other" gender. Summary data for the two-spirit and "other" gender categories are omitted from the table because of low frequency. The ED cohort ("EDs") represents the entire sample of individuals with lifetime ED diagnoses and includes the subgroups: AN, AN Mixed, BN, BED, and BN-BED. AN = lifetime anorexia nervosa, AN Mixed = lifetime anorexia nervosa and another lifetime ED, BED = lifetime binge-eating disorder, BN = lifetime bulimia nervosa, BN-BED = lifetime bulimia nervosa and lifetime binge-eating disorder, ED = eating disorders, OCI-12 = Obsessive-Compulsive Inventory-12.

3.5. Objective 4: gender differences in OCD symptoms

Gender-diverse individuals had the most severe symptoms, followed by men and then women (Fig. 4, Supplementary Tables 2–6, Supplementary Fig. 1). Gender-diverse individuals (79 %) and men (65 %) were over twice as likely to screen positive for OCD compared to women (56 %) (adjusted $ps < 0.05$) (Supplementary Table 6). Non-cisgender men had significantly higher OCI-12 total, ordering, and obsessing scores than cisgender men ($ps < 0.05$), but were not significantly more likely to screen positive for OCD (non-cisgender: 76 %, cisgender: 59 %; OR = 1.47, 95 % CI: 0.81–2.70).

Men with EDs resembled the OCD group more closely than women with EDs. Men in the ED cohort and AN, AN Mixed, and BN groups had significantly higher ordering scores than men with OCD (Supplementary Fig. 1A, right panel; Supplementary Table 2). Both men and women in the ED groups generally scored significantly higher than same-gender individuals in the anxiety-related disorders cohort, with larger effect sizes for men (Supplementary Fig. 1B, middle and right panels; Supplementary Table 2). All ED groups, except BED, scored significantly higher than same-gender non-clinical controls, particularly men (Supplementary Fig. 1C, right panel; Supplementary Table 2).

3.6. Anxiety and depression comorbidity

We examined anxiety and depression as covariates to offer greater depth to the main findings. Upon controlling for these, comparisons of OCD dimensions across ED groups (Supplementary Table 7) and odds of screening positive for OCD (Supplementary Table 1) remained consistent. While correlations between OCD dimensions and ED symptoms were attenuated, statistically significant correlations with small effect sizes persisted (Supplementary Table 8).

4. Discussion

Our study of nearly 6000 individuals with lifetime EDs reveals elevated OCD symptoms across all EDs types, adding new insights to the literature (Bastiani et al., 1996; Davies et al., 2009; Halmi et al., 2003; Hasler et al., 2005; Matsunaga et al., 1999b; Naylor et al., 2011; Roberts, 2006).

4.1. OCD dimensions in EDs

Obsessing was the most severe dimension observed, followed by ordering, checking, and washing, mirroring findings in OCD and anxiety disorders (Abramovitch et al., 2021). Although many studies support these findings, variations may arise from different measures (Bastiani et al., 1996; Danner et al., 2022; Davies et al., 2009; Halmi et al., 2003; Hasler et al., 2005; Levinson et al., 2019a; Matsunaga et al., 1999b; von Ranson et al., 1999). The OCI-12 obsessing subscale assesses general intrusive thoughts rather than classic OCD obsessions, such as fear of germs or responsibility for harm. Elevated scores may reflect true OCD symptoms, repetitive thinking about food and body image, or broader obsessionality. Future research should clarify the content and functionality of "obsessing" in EDs to refine conceptual models and treatment approaches.

Debate exists over whether OCD symptoms in EDs reflect "true" OCD

Table 2
OCD dimensions in relation to ED history.

Group 1	Group 2	OCI-12	Group 1 *M* (*SD*)	Group 2 *M* (*SD*)	*t*-Test *p*-value	Cohen's *d*		Interpretation[a]
						Est.	Magnitude	
AN	BN	Total	14.45 (10.42)	15.31 (11.05)	.06	−0.08	Nil	–
		Washing	2.20 (2.99)	2.09 (2.99)	.39	0.04	Nil	–
		Checking	2.92 (2.95)	3.09 (3.09)	.18	−0.06	Nil	–
		Ordering	4.33 (3.56)	4.54 (3.78)	.17	−0.06	Nil	–
		Obsessing	5.00 (3.72)	5.59 (3.87)	<.001***	−0.16	Nil	–
AN	BED	Total	14.45 (10.42)	11.71 (9.25)	<.001***	0.27	Small	AN > BED
		Washing	2.20 (2.99)	1.50 (2.48)	<.001***	0.24	Small	AN > BED
		Checking	2.92 (2.95)	2.23 (2.58)	<.001***	0.24	Small	AN > BED
		Ordering	4.33 (3.56)	3.69 (3.36)	<.001***	0.18	Nil	–
		Obsessing	5.00 (3.72)	4.29 (3.55)	<.001***	0.19	Nil	–
AN	AN Mixed	Total	14.45 (10.42)	15.61 (10.84)	.001**	−0.11	Nil	–
		Washing	2.20 (2.99)	2.31 (3.04)	.28	−0.04	Nil	–
		Checking	2.92 (2.95)	3.05 (3.07)	.21	−0.04	Nil	–
		Ordering	4.33 (3.56)	4.73 (3.61)	.001**	−0.11	Nil	–
		Obsessing	5.00 (3.72)	5.52 (3.84)	<.001***	−0.14	Nil	–
AN	BN-BED	Total	14.45 (10.42)	15.29 (10.39)	.04*	−0.08	Nil	–
		Washing	2.2 (2.99)	2.15 (2.90)	.67	0.02	Nil	–
		Checking	2.92 (2.95)	3.16 (2.98)	.04*	−0.08	Nil	–
		Ordering	4.33 (3.56)	4.43 (3.58)	.48	−0.03	Nil	–
		Obsessing	5.00 (3.72)	5.56 (3.70)	<.001***	−0.15	Nil	–
BN	BED	Total	15.31 (11.05)	11.71 (9.25)	<.001***	0.35	Small	BN > BED
		Washing	2.09 (2.99)	1.50 (2.48)	<.001***	0.22	Small	BN > BED
		Checking	3.09 (3.09)	2.23 (2.58)	<.001***	0.30	Small	BN > BED
		Ordering	4.54 (3.78)	3.69 (3.36)	<.001***	0.24	Small	BN > BED
		Obsessing	5.59 (3.87)	4.29 (3.55)	<.001***	0.35	Small	BN > BED
BN	BN-BED	Total	15.31 (11.05)	15.29 (10.39)	.96	0.00	Nil	–
		Washing	2.09 (2.99)	2.15 (2.90)	.70	−0.02	Nil	–
		Checking	3.09 (3.09)	3.16 (2.98)	.64	−0.02	Nil	–
		Ordering	4.54 (3.78)	4.43 (3.58)	.52	0.03	Nil	–
		Obsessing	5.59 (3.87)	5.56 (3.70)	.85	0.01	Nil	–
BN	AN Mixed	Total	15.31 (11.05)	15.61 (10.84)	.55	−0.03	Nil	–
		Washing	2.09 (2.99)	2.31 (3.04)	.11	−0.07	Nil	–
		Checking	3.09 (3.09)	3.05 (3.07)	.79	0.01	Nil	–
		Ordering	4.54 (3.78)	4.73 (3.61)	.28	−0.05	Nil	–
		Obsessing	5.59 (3.87)	5.52 (3.84)	.71	0.02	Nil	–
BED	AN Mixed	Total	11.71 (9.25)	15.61 (10.84)	<.001***	−0.38	Small	AN Mixed > BED
		Washing	1.50 (2.48)	2.31 (3.04)	<.001***	−0.28	Small	AN Mixed > BED
		Checking	2.23 (2.58)	3.05 (3.07)	<.001***	−0.28	Small	AN Mixed > BED
		Ordering	3.69 (3.36)	4.73 (3.61)	<.001***	−0.29	Small	AN Mixed > BED
		Obsessing	4.29 (3.55)	5.52 (3.84)	<.001***	−0.33	Small	AN Mixed > BED
AN Mixed	BN-BED	Total	15.61 (10.84)	15.29 (10.39)	.48	0.03	Nil	–
		Washing	2.31 (3.04)	2.15 (2.90)	.21	0.05	Nil	–
		Checking	3.05 (3.07)	3.16 (2.98)	.42	−0.04	Nil	–
		Ordering	4.73 (3.61)	4.43 (3.58)	.05	0.08	Nil	–
		Obsessing	5.52 (3.84)	5.56 (3.70)	.85	−0.01	Nil	–
BED	BN-BED	Total	11.71 (9.25)	15.29 (10.39)	<.001***	−0.36	Small	BN-BED > BED
		Washing	1.50 (2.48)	2.15 (2.90)	<.001***	−0.24	Small	BN-BED > BED
		Checking	2.23 (2.58)	3.16 (2.98)	<.001***	−0.33	Small	BN-BED > BED
		Ordering	3.69 (3.36)	4.43 (3.58)	<.001***	−0.21	Small	BN-BED > BED
		Obsessing	4.29 (3.55)	5.56 (3.70)	<.001***	−0.35	Small	BN-BED > BED

Note. The total sample comprises the entire ED cohort, encompassing individuals of all genders, including men, women, gender-diverse (i.e., nonbinary, gender fluid), two-spirit, and other genders. According to Cohen's conventions, Cohen's *d* values with an absolute value ≥ 0.2 are small, ≥ 0.5 are medium, and ≥ 0.8 are large, while values below these thresholds are nil. AN = lifetime anorexia nervosa, AN Mixed = lifetime anorexia nervosa and another lifetime ED, BED = lifetime binge-eating disorder, BN = lifetime bulimia nervosa, BN-BED = lifetime bulimia nervosa and lifetime binge-eating disorder.

[a] Displayed if $p < .05$ and Cohen's $d \geq |0.2|$.

*** $p < .001$.

** $p < .01$.

* $p < .05$.

symptoms, are phenomenologically similar, or arise from food restriction and malnourishment (Swinbourne and Touyz, 2007). Food restriction intensifies obsessionality and compulsivity, as shown in starvation experiments and animal models (Gutierrez, 2013; Keys et al., 1950). Obsessions about eating, shape, and weight and functionally related compulsive behaviors such as vomiting and driven exercise, are exhibited in EDs. However, our findings of elevated OCD-specific dimensions such as washing and checking suggest alignment of obsessive-compulsive symptoms with primary OCD, supporting some previous studies (Davies et al., 2009; Halmi et al., 2003; Naylor et al., 2011).

The co-occurrence of obsessive-compulsive symptoms in ED populations is consistent with research on diagnostic comorbidity (Drakes et al., 2021; Mandelli et al., 2020). Shared factors such as perfectionism, impulsivity, compulsivity, stressful life events, serotonergic dysregulation, neurocircuitry, and genetic factors are believed to contribute to the comorbidity (Egan et al., 2011; Levinson et al., 2019b; Williams et al., 2022). Advances in genomics hold promise for identifying the causal pathways linking these symptoms (Yilmaz et al., 2020).

4.2. Comparisons with non-clinical and other clinical populations

As hypothesized, ED groups scored higher than non-psychiatric

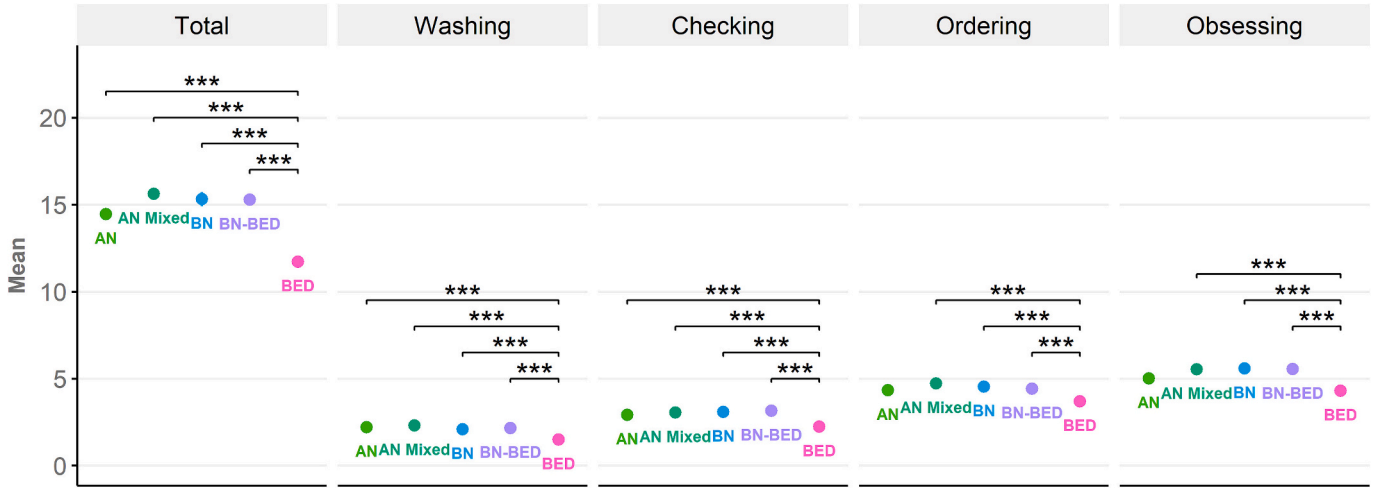

Fig. 1. Obsessive-compulsive disorder (OCD) dimensions across lifetime eating disorder (ED) groups. Statistically significant differences with Cohen's *d* effect sizes of small or larger are depicted. AN = anorexia nervosa, AN Mixed = AN and another eating disorder, BN = bulimia nervosa, BN-BED = bulimia nervosa and binge-eating disorder, BED = binge-eating disorder. *$p < .05$. **$p < .01$. ***$p < .001$.

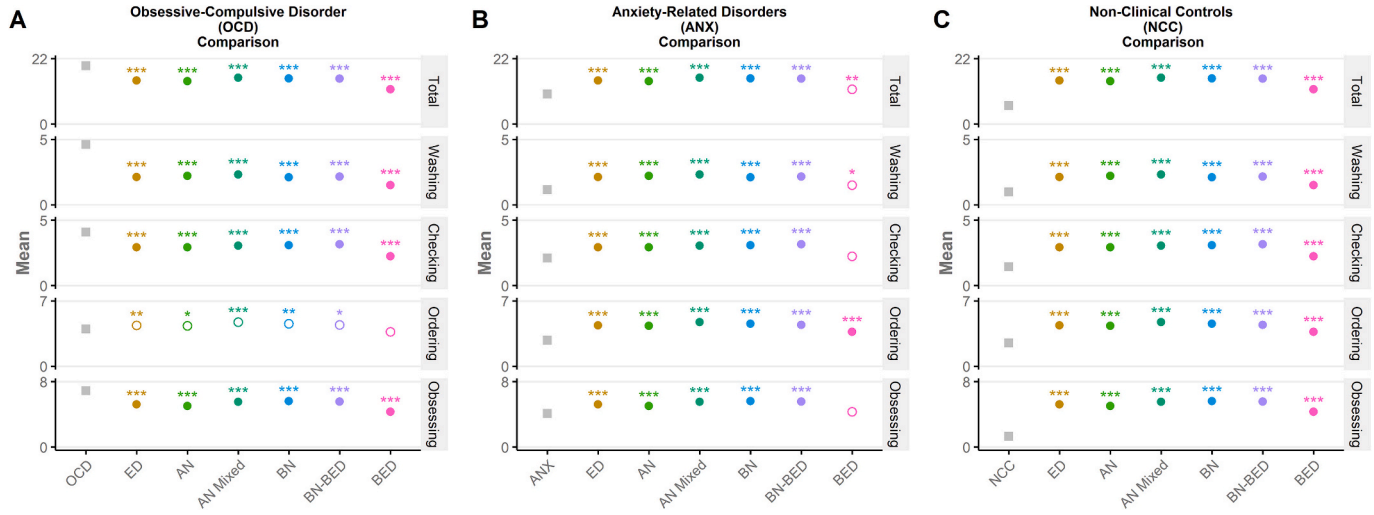

Fig. 2. Comparison of the eating disorder (ED) cohort with the obsessive-compulsive disorder (OCD), anxiety-related disorders (ANX), and non-clinical community control (NCC) cohorts on the OCI-12 total and subscale scores A. Comparison of the OCD cohort to the ED cohort on the OCI-12 total and subscale scores. B. Comparison of the ANX cohort to the ED cohort on the OCI-12 total and subscale scores. C. Comparison of the NCC cohort to the ED cohort on the OCI-12 total and subscale scores. OCD = obsessive-compulsive disorder, ED = any eating disorder, AN = anorexia nervosa, AN Mixed = AN and another eating disorder, BN = bulimia nervosa, BN-BED = bulimia nervosa and binge-eating disorder, BED = binge-eating disorder, ANX = anxiety-related disorders, NCC = non-clinical controls. The comparison group is represented by the square. Asterisks represent statistically significant differences between the various ED groups and the comparison group. Closed circles represent Cohen's *d* effect sizes small or larger in magnitude ($-0.2 \geq d \geq 0.2$), whereas open circles represent negligible effect sizes. Standard errors are omitted from the display as they do not exceed the boundaries of the circles or squares. *$p < .05$. **$p < .01$. ***$p < .001$.

controls on OCD dimensions, including those with BED, underscoring the need for further investigation of OCD prevalence in BED (Drakes et al., 2021; Mandelli et al., 2020). The ED cohort scored lower than the OCD cohort on most OCD dimensions; however, some ED groups scored higher on ordering. Some studies support this finding (Halmi et al., 2003; Matsunaga et al., 1999b, 1999c, 1999a). This may reflect a transdiagnostic phenomenon of the need for order and symmetry in some presentations of OCD and EDs, aligning with concepts of perfectionism and "not just right experiences" (Coles et al., 2003; Egan et al., 2011; Kennedy et al., 2018). This highlights the need to explore how overlapping traits impact disorder development and suggests that integrated treatments may be beneficial.

Contrary to our hypothesis, those with AN, BN, and multiple EDs scored higher on all OCD dimensions than individuals with anxiety-related disorders. This finding could reflect a stronger genetic overlap between OCD and AN than with anxiety disorders (Grotzinger et al., 2022), as well as pleiotropy between OCD and AN risk genes (Yilmaz et al., 2023).

4.3. Correlation between OCD dimensions and core ED symptoms

All OCD dimensions correlated positively with ED psychopathology and behaviors, especially obsessing, congruent with Levinson et al. (2019a). Obsessing may be a transdiagnostic trait, amplified in individuals with EDs and co-occurring obsessive-compulsive symptoms. As hypothesized, OCD dimensions were most strongly linked to ED psychopathology, followed by weight control behaviors, and least to binge eating. This pattern supports the role of cognitive symptoms as critical "bridge symptoms" maintaining comorbidity (Meier et al., 2020). Stronger correlations with fasting and compulsive exercise

ED group	OCI-12	Core ED symptoms									
		restraint	eating concern	shape concern	weight concern	global	fasting	binge eating	self-induced vomiting	laxative use	driven exercise
EDs (*n* = 5927)	Total	.29***	.38***	.34***	.34***	.38***	.28***	.09***	.06***	.15***	.19***
	Washing	.17***	.21***	.19***	.19***	.21***	.17***	.03**	.04**	.12***	.14***
	Checking	.23***	.29***	.26***	.27***	.29***	.23***	.06***	.02	.11***	.16***
	Ordering	.24***	.28***	.27***	.27***	.30***	.23***	.07***	.06***	.12***	.17***
	Obsessing	.28***	.39***	.37***	.37***	.39***	.26***	.10***	.06***	.11***	.13***
AN (*n* = 2330)	Total	.30***	.38***	.35***	.35***	.38***	.25***	.03	.05*	.12***	.16***
	Washing	.16***	.20***	.18***	.19***	.20***	.14***	.01	.03	.10***	.12***
	Checking	.23***	.29***	.26***	.27***	.29***	.20***	.02	.02	.09***	.13***
	Ordering	.26***	.30***	.28***	.29***	.31***	.21***	.01	.05**	.11***	.16***
	Obsessing	.28***	.39***	.36***	.36***	.38***	.24***	.06**	.04	.08***	.10***
AN Mixed (*n* = 1293)	Total	.30***	.39***	.38***	.37***	.40***	.31***	.07**	.04	.14***	.20***
	Washing	.19***	.26***	.23***	.23***	.25***	.20***	.03	.02	.12***	.11***
	Checking	.21***	.28***	.27***	.28***	.28***	.23***	.02	-.02	.09**	.17***
	Ordering	.25***	.31***	.30***	.29***	.32***	.26***	.08**	.06*	.13***	.17***
	Obsessing	.29***	.38***	.40***	.38***	.40***	.30***	.09**	.06*	.11***	.19***
BN (*n* = 740)	Total	.36***	.52***	.47***	.47***	.50***	.31***	.22***	.08*	.13**	.18***
	Washing	.22***	.34***	.28***	.27***	.30***	.20***	.17***	.04	.09*	.13***
	Checking	.32***	.41***	.39***	.38***	.41***	.29***	.18***	.05	.12**	.18***
	Ordering	.28***	.38***	.34***	.35***	.37***	.26***	.18***	.07	.10**	.15***
	Obsessing	.31***	.53***	.49***	.48***	.50***	.25***	.17***	.09*	.11**	.12**
BN-BED (*n* = 899)	Total	.24***	.32***	.29***	.30***	.33***	.26***	.13***	.09**	.20***	.18***
	Washing	.14***	.16***	.14***	.14***	.17***	.17***	.03	.08**	.18***	.14***
	Checking	.21***	.27***	.23***	.26***	.28***	.24***	.13***	.06	.17***	.16***
	Ordering	.16***	.19***	.18***	.18***	.21***	.16***	.09**	.07*	.14***	.15***
	Obsessing	.23***	.37***	.34***	.35***	.37***	.25***	.14***	.09**	.14***	.12***
BED (*n* = 665)	Total	.16***	.30***	.27***	.27***	.30***	.22***	.10*	.12**	.18***	.25***
	Washing	.10*	.15***	.11**	.14***	.15***	.16***	.06	.08*	.17***	.22***
	Checking	.12**	.24***	.19***	.18***	.22***	.16***	.07	.10*	.22***	.17***
	Ordering	.13***	.24***	.23***	.22***	.24***	.19***	.07	.09*	.11**	.20***
	Obsessing	.13***	.27***	.27***	.28***	.28***	.16***	.08*	.09*	.09*	.19***

Fig. 3. Correlations between obsessive-compulsive dimensions and eating disorder (ED) cognitions and behaviors. The interpretation of the effect size magnitude was based on the recommendation of Cohen (1988, DOI: https://doi.org/10.4324/9780203771587). Effect sizes of at least small are shaded. Small, medium, and large positive effect sizes are shaded light, medium, and dark green respectively. The ED cohort ("EDs") represents the entire sample of individuals with lifetime ED diagnoses and includes the subgroups: AN, AN Mixed, BN, BED, and BN-BED. AN = lifetime anorexia nervosa, AN Mixed = lifetime anorexia nervosa and another lifetime ED, BED = lifetime binge-eating disorder, BN = lifetime bulimia nervosa, BN-BED = lifetime bulimia nervosa and lifetime binge-eating disorder, EDs = eating disorders, OCI-12 = Obsessive-Compulsive Inventory. *$p < .05$. **$p < .01$. ***$p < .001$. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

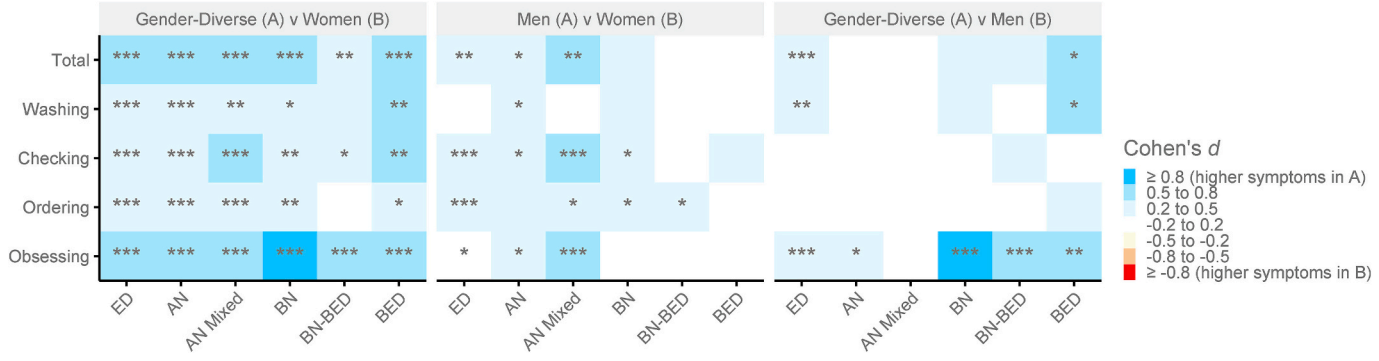

Fig. 4. Gender differences in obsessive compulsive disorder dimensions. In the grayscale print version of this figure, the blue shading (indicating higher symptoms in A) and red shading (indicating higher symptoms in B) depicted in the legend is unclear; we would like to note here that there were no cells shaded red in the figure. ED = any eating disorder. AN = anorexia nervosa, AN Mixed = AN and another eating disorder, BN = bulimia nervosa, BN-BED = bulimia nervosa and binge-eating disorder, BED = binge-eating disorder. *$p < .05$. **$p < .01$. ***$p < .001$.

compared to binge eating and vomiting may reflect a shared reliance on ritualistic behaviors to manage distress or achieve control—traits aligning with the perfectionism and rigidity common in restrictive EDs and OCD (Egan et al., 2011). Our study extends existing findings by showing stronger connections between OCD dimensions and AN and BN compared to BED, and a pronounced link to fasting.

4.4. Gender differences in obsessive-compulsive symptoms

Gender-diverse individuals and men in the ED cohort reported more severe OCD dimensions, consistent with higher OCD rates in gender minorities (Pinciotti et al., 2022; Warrier et al., 2020) and greater checking and ordering in men with OCD (Mathis et al., 2011). Elevated scores in gender-diverse individuals may reflect unique stressors such as stigma and discrimination (Tan et al., 2020).

4.5. Clinical implications

This study underscores the high prevalence of OCD symptoms across AN, BN, and BED. Clinicians should be vigilant for OCD symptoms in ED patients, as these can persist after ED treatment and may be significant even in the absence of a formal OCD diagnosis (Albert et al., 2001; Halmi et al., 2003; Meule and Voderholzer, 2022; Olatunji et al., 2010). Currently, there is no validated treatment for comorbid ED and OCD,

though a clinical manual is available to guide practitioners (DiLossi and Harrison, 2023). Addressing unique stressors affecting gender-diverse individuals is crucial for comprehensive care.

4.6. Future research directions

Several key avenues for future research are outlined below.

4.6.1. Mechanisms

Future research should distinguish the unique and shared pathways underlying EDs and OCD to clarify etiology and inform interventions. Genetically, AN and OCD display one of the strongest correlations among psychiatric disorders ($r_g = 0.45$) (Watson et al., 2019). Genomic studies, such as cross-trait genome-wide association studies (GWAS), Mendelian randomization, latent causal variable models, and polygenic risk score analyses could help identify causal pathways (Walker et al., 2022; Yilmaz et al., 2020, 2023). Identifying shared genetic and biological mechanisms could yield novel and more effective treatments (Yilmaz et al., 2020).

Neuroanatomical models highlight distinct but intercommunicating corticostriatal circuits underlying impulsivity and compulsivity (Fineberg et al., 2010). While traditionally conceptualized as opposite ends of a behavioral spectrum, impulsivity and compulsivity are increasingly recognized as co-occurring in several psychiatric disorders (Fineberg et al., 2010). Their role in EDs and obsessive-compulsive symptoms remains complex, and strengthening theoretical models is essential for translational purposes (Beckenstrom et al., 2023; Carr et al., 2021; Howard et al., 2020; Steiner et al., 2024). Additionally, exploration of potential mediators in the association between ED and obsessive-compulsive symptoms is necessary (Tempia Valenta et al., 2024).

4.6.2. Translational research

Translational research efforts should focus on integrating treatments targeting shared mechanisms of EDs and OCD. Cognitive-behavior therapy for perfectionism (CBT—P), efficacious for reducing perfectionism and mental health symptoms, could potentially augment ED treatment (Galloway et al., 2022). Comparing CBT-Ef (focused enhanced CBT for EDs) versus CBT-Eb (broad enhanced CBT for EDs) specifically including the perfectionism module could provide insight into treatment outcomes for ED patients with co-occurring OCD symptoms. Although exposure and response prevention (ERP) is effective for OCD, its application to EDs has yielded mixed results (Butler and Heimberg, 2020). Several recommendations have been made to optimize ERP for EDs and continue systematic evaluations (Becker et al., 2019; Butler and Heimberg, 2020; Reilly et al., 2017). Unfortunately, cognitive remediation therapy, aimed at improving psychiatric symptoms by targeting rigidity, has had limited support for EDs and OC symptoms (Hagan et al., 2020).

4.6.3. Subtyping, endophenotypes, and diagnostic classification

Identifying traits as markers of clinical subgroups or endophenotypes holds potential for advancing classification and treatment. For example, impulsivity has been linked to poorer clinical outcomes in a subgroup of OCD patients (Kashyap et al., 2012). Personality traits such as perfectionism, impulsivity, and compulsivity may help characterize ED patients at higher risk for obsessive-compulsive symptoms or serve as endophenotypes for ED-OCD comorbidity. Finally, our findings may inform discussions and future research on ED nosography (Culbert and Klump, 2007).

4.7. Limitations and strengths

ED diagnoses were based on a self-report questionnaire rather than clinical interview, which may have introduced bias, though algorithms were used to define DSM-5 ED diagnoses from questionnaires to enhance accuracy. Only lifetime ED diagnoses were available, which may include individuals in recovery, potentially biasing OCD symptom severity downward. The OCD and anxiety-related disorders cohorts consisted of acute cases, likely experiencing more severe symptoms. The study focused on AN, BN, and BED, excluding other specified feeding or eating disorders (OSFED), avoidant/restrictive food intake disorder (ARFID), and understudied disordered eating presentations. The current study lacked data on OCD diagnoses in the ED cohort. Nevertheless, OCD symptoms are frequently endorsed in EDs, even in the absence of OCD (Albert et al., 2001; Halmi et al., 2003; Meule and Voderholzer, 2022; Olatunji et al., 2010). We could not control for sociodemographic differences (e.g., gender, education) between cohorts; however, gender-stratified analyses were conducted to supplement the main comparisons. Future research should incorporate lifetime treatment experiences to control for their impact on comorbidity. Despite these limitations, this study is one of the first to compare OCD symptoms across ED, anxiety-related disorders, and OCD samples and to examine comorbidity by gender. Its large, community-recruited sample with various EDs is another key strength and may enhance generalizability (Carrino et al., 2023).

5. Conclusion

This study highlights the prominence of OCD symptoms in AN, BN, and BED. Clinicians should be alert to OCD symptoms when treating EDs. Despite clinical need, no unified, empirically validated treatment protocol for comorbid ED and OCD symptoms exists (DiLossi and Harrison, 2023). The present study highlights the importance of this symptom combination and calls for further research on underlying mechanisms and integrated treatments.

CRediT authorship contribution statement

Avantika Kapadia: Writing – review & editing, Writing – original draft, Methodology, Conceptualization. **Laura M. Thornton:** Writing – review & editing, Writing – original draft, Validation, Supervision, Methodology, Funding acquisition, Formal analysis, Data curation. **Melissa A. Munn-Chernoff:** Writing – review & editing, Writing – original draft, Supervision, Methodology. **Amitai Abramovitch:** Writing – review & editing. **Dean McKay:** Writing – review & editing. **Jonathan S. Abramowitz:** Writing – review & editing. **Zeynep Yilmaz:** Writing – review & editing. **James J. Crowley:** Writing – review & editing. **Cynthia M. Bulik:** Writing – review & editing, Supervision, Resources, Funding acquisition. **Hunna J. Watson:** Writing – review & editing, Writing – original draft, Validation, Supervision, Methodology, Formal analysis, Data curation, Conceptualization.

Ethical standards

This study was conducted in accordance with the Helsinki Declaration of 1975, as revised in 2008. It was approved by the University of North Carolina at Chapel Hill Biomedical Institutional Review Board (IRB) Protocol #19-1387, and participants provided informed consent online.

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Declaration of competing interest

AK, LMT, MAM-C, AA, DM, JSA, ZY, JJC, and HJW report no interests to declare. CMB reports Pearson Education, Inc. (author, royalty recipient).

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jad.2025.01.068.

Data availability

The Eating Disorders Genetics Initiative (EDGI) dataset will become publicly available in NIMHs National Data Archive (collection #3310) (https://nda.nih.gov/).

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