

DSM-IV Threshold Versus Subthreshold Bulimia Nervosa

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ABSTRACT

Objective: The purpose of the present work is to determine whether bulimia nervosa (BN) and eating disorder not otherwise specified, BN type (EDNOS-BN) were qualitatively distinct in terms of eating and general psychopathology.

Method: This study presents a comparison of 138 women with BN and 57 with EDNOS-BN from a multisite study on eating-related and general psychopathology measures.

Results: Although women with BN reported higher lifetime history rates of anorexia nervosa, greater binge eating and vomiting frequency, and more eating concerns, no significant differences were observed between groups on measures of perfectionism, impulsivity, obsessive-compulsiveness, anxiety, depressive symptomatology, or alcohol/substance problems. Based on the partial η^2 values, the distinction between BN and EDNOS-

BN accounted for < 5% of the criterion variance in general psychopathology measures. Post hoc analyses comparing EDNOS-BN with objective bulimic episodes (OBES; $n = 34$) versus no OBES ($n = 23$) found greater EDEQ-4 Restraint subscale scores for EDNOS-BN without OBES. However, there was no significant difference on the *EDEQ-4* Eating Concern subscale between the two EDNOS-BN subgroups.

Conclusion: The findings highlight the clinical significance of BN partial syndrome and prompt reevaluation of existing BN diagnostic boundaries. Post hoc analyses also underscore the need for greater differentiation within EDNOS. © 2006 by Wiley Periodicals, Inc.

Keywords: bulimia nervosa; threshold; subthreshold; diagnosis

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Introduction

The validity of current eating disorder diagnostic criteria has been the subject of recent debate and empirical scrutiny. The fact that the residual category eating disorder not otherwise specified (EDNOS) is the more common diagnosis in many outpatient eating disorder clinics highlights this nosological problem.^{1–3} Complicating the issue further is the paucity of data on the clinical characteristics, psychiatric comorbidity, causal mechanisms, and treatment interventions for EDNOS.

The few studies that have compared EDNOS with anorexia nervosa (AN) and bulimia nervosa (BN) have found differences in demographic, eating disorder symptoms, and general psychopathology measures, but similar levels of weight and shape concerns.^{4–6} However, as EDNOS is a residual catch-all classification, there is need for nosological differentiation within EDNOS, i.e., a need for “correct” boundaries for AN and BN and a need for correct differentiation within EDNOS.

Fairburn and Bohn⁷ recently proposed three solutions to this diagnostic dilemma. The first proposal is to “relax” overly stringent diagnostic boundaries. Suggested examples include dropping the

amenorrhea requirement, and/or raising the low body weight criterion in AN and decreasing the frequency threshold for binge eating and purging in BN. The second proposal is to absorb the conditions that fall just below diagnostic threshold into AN and BN categories and reclassify the cases with unique symptom constellations as “mixed”. The third suggestion, a “transdiagnostic” proposal, would create a single unitary diagnostic category that focuses on the features common rather than distinct among eating disorders.

Given the paucity of information about EDNOS, the purpose of our investigation was to further explore this nosological conundrum. Consequently, we compared women with BN and EDNOS (BN type) from a multi-site study on a number of eating disorder-related and general pathology measures. In light of the common features between BN and EDNOS-BN, we explored whether these two groups will be more alike as opposed to distinct from one another.

Method

Participants

Participants were 204 adult women (mean age = 25.7 years, $SD = 8.9$) recruited through advertisements in eating disorder clinics and surrounding communities at five sites (Madison, WI; Minneapolis, MN; Fargo, ND; Chicago, IL; and Columbia, MO). Inclusion criteria, as stated in the advertisements, were females, ages 18 to 65, who were binge eating and purging. This was a relatively broad statement designed to “capture” all potential qualifying participants who were engaging in these bulimic behaviors. Nine subjects with a body mass index (BMI) of $< 17.5 \text{ kg/m}^2$ were excluded, leaving 195 participants for the present analyses.

The Structured Clinical Interview for DSM-IV, Patient Edition (SCID-P), a semi-structured interview to assess Axis I disorders,⁸ was used to verify diagnosis. In this study, only the SCID eating disorder module for BN and AN was administered in a telephone interview to insure participants met entry criteria for current bulimic symptoms. Lifetime eating disorder diagnoses were also established in order to evaluate a history of AN. Based on this interview, 138 participants (70.8%) met the Diagnostic and Statistical Manual of Mental Disorders-IV, revised⁹ criteria for BN: 133 met criteria for current BN-purging type, and 5 participants met criteria for current BN-non-purging. Fifty-seven participants (29.2%) met all DSM-IV criteria for BN except, either: (a) frequency of binge eating or purging were less than twice per week, but at least

once per week ($n = 34$), or, (b) binge eating episodes were not objectively large ($n = 23$). Twenty-one (91.3 %) of this group reported subjective binge eating episodes (SBEs), which is defined as binge eating episodes that are accompanied by a sense of loss of control but are not objectively large in quantity.¹⁰ Both of these groups of participants were classified as EDNOS-BN.

Procedure

Potential participants responded by phone to advertisements placed in eating disorder clinics and surrounding communities. Research personnel described the study, and interested participants were given a brief phone screen that included questions from the SCID-P. Individuals who met current DSM-IV diagnostic criteria for BN or EDNOS-BN were invited to take part in the study. An appointment was made during which subjects provided informed consent and completed a series of paper-and-pencil measures. Participants were paid fifty dollars for their time. Institutional Review Boards approved this study at each of the participating sites.

Measures

Eating Disorder Examination Questionnaire—Version 4 (EDEQ-4). The EDEQ-4 is a 36-item self-report measure adapted from the Eating Disorder Examination interview (EDE).¹¹ It provides 4 subscales: Weight Concern, Shape Concern, Eating Concern, and Restraint. Coefficient α in the current study ranged from .70 (Restraint) to .83 (Shape Concern). In addition, the EDEQ-4 provides information regarding the frequency of binge and purge episodes in the previous month.

Frost Multi-dimensional Perfectionism Scale (MPS). The MPS is a 35-item self-report questionnaire designed to assess major dimensions of perfectionism.¹² The MPS provides 6 scale scores (Concern over Mistakes, Personal Standards, Parental Expectations, Parental Criticism, Doubts about Action, Organization) and a total score. Coefficient α in the present study ranged from .79 (Doubts about Action) to .93 (Organization) for the MPS scales and was .93 for the total score.

Barratt Impulsivity Scale (BIS). The BIS is a 30-item self-report measure of impulsivity that provides 3 subscale scores (Attention, Motor, Nonplanning) and a total score.¹³ Coefficient α for the BIS ranged from .66 (Attention) to .74 (Nonplanning) for subscales and was .85 for BIS total score.

Impulsive Behavior Scale (IBS). The IBS is a 25-item self-report questionnaire that assesses the frequency of impulsive and self-destructive behaviors.¹⁴ Coefficient α for the total IBS score in the present study was .87.

TABLE 1. Demographic characteristics by diagnostic group

	BN (<i>n</i> = 138)	EDNOS-BN (<i>n</i> = 57)	Significance
Age (mean, <i>SD</i>)	25.9 (8.9)	25.2 (8.4)	$t_{(193)} = 0.54, p = .584$
BMI (mean, <i>SD</i>)	23.6 (5.6)	22.5 (4.0)	$t_{(189)} = 1.32, p = .188$
Never married (<i>n</i> , %)	104 (75.4%)	40 (70.2%)	Fisher's exact $p = .477$
Post-high school education (<i>n</i> , %)	127 (92.0%)	51 (89.5%)	Fisher's exact $p = .582$
White (<i>n</i> , %)	120 (87.0%)	57 (100.0%)	Fisher's exact $p = .002$
Students (<i>n</i> , %)	81 (58.7%)	36 (63.2%)	Fisher's exact $p = .631$
Psychotherapy past 6 months (<i>n</i> , %)	93 (67.4%)	34 (59.6%)	Fisher's exact $p = .324$
Psychotropic medication past 6 months (<i>n</i> , %)	52 (37.3%)	13 (22.8%)	Fisher's exact $p = .047$

Note: BN = bulimia nervosa; EDNOS-BN = eating disorder not otherwise specified, bulimia nervosa type; *SD* = standard deviation; BMI = body mass index.

Michigan Assessment Screening Test/Alcohol-Drug (MAST/AD). The MAST/AD is a 25-item self-report measure designed to assess the severity of drug and alcohol problems.¹⁵ It has been shown to correlate substantially with a variety of other alcohol and drug screening measures.¹⁵ In the present study, coefficient α was .76.

Inventory for Depressive Symptomatology-Self Report (IDS-SR). The IDS-SR is a 30-item, depression symptom severity rating scale.¹⁶ The IDS has demonstrated good reliability and validity in previous studies.¹⁶ Coefficient α for the IDS-SR total score in the current study was .88.

Spielberger State-Trait Anxiety Inventory (STAI/SSAI). The STAI/SSAI is a 40-item self-report instrument measuring state and trait anxiety.¹⁷ Coefficient α in the present study were .95 for state anxiety and .94 for trait anxiety.

Maudsley Obsessive-Compulsive Inventory (MOCI). The MOCI is a 30 item true-false, self-report questionnaire that assesses overt rituals and their related obsessions.¹⁸ The MOCI provides 4 subscale scores (Checking, Washing, Repetition, and Doubting) and a total score. Coefficient α for the MOCI subscales ranged from .64 (Doubting) to .76 (Checking) and was .85 for the MOCI total score.

Statistical Analysis

Diagnostic groups (BN vs. EDNOS-BN) were compared on demographic characteristics using two-tailed independent samples *t* test for continuously distributed measures (e.g., age, BMI) and two-tailed Fisher's exact test for dichotomous categorical measures (never married, post-high school education, white, student).

Diagnostic groups were compared on eating pathology measures using separate multivariate analyses of variance (MANOVA) for EDEQ-4 subscale scores (Restraint, Eating Concern, Shape Concern, Weight Concern) and eating behaviors (binge episodes and self-induced vomiting episodes). Eating behaviors were log transformed due to extreme positive skew. Univariate analyses were performed only when multivariate effects reached statistical significance. Partial η^2 values were calculated for all mul-

tivariate and univariate tests to describe the portion of criterion variance accounted for by diagnostic group. Diagnostic groups were compared on lifetime history of AN (from the SCID-P) using the two-tailed Fisher's exact test. Tests of significance for comparisons on eating pathology and other psychopathology (described below) were based on a Bonferroni-corrected α of .006 (.05/8).

Four separate MANOVAs were used to compare diagnostic groups on subscales and total scores on the MPS, BIS, MOCI, and measures of depression/anxiety (IDS, STAI, SSAI). In addition, a univariate ANOVA was used to compare diagnostic groups on MAST/AD scores.

Results

Demographics

Demographic information is presented separately by diagnostic group in **Table 1**. Participants were predominantly white, never married, well educated, and of normal weight. Most participants were students, with more than one half of all participants in their twenties. Diagnostic groups were therefore comparable in terms of demographic characteristics, with the exception of ethnicity. The BN group included 18 minority participants (5 black, 3 Hispanic, 6 Asian, 4 other); the EDNOS-BN was entirely white.

Most participants (65%) were in treatment for their eating disorder at the time of presenting for this study. Groups did not differ on current psychotherapy participation (BN: 67.4%, EDNOS-BN: 59.6%), but did differ on pharmacotherapy participation (BN, 37.3%; EDNOS-BN, 22.8%).

Eating Pathology

Comparisons between diagnostic groups in eating pathology measures are presented in **Table 2**. Participants in the BN group were significantly more symptomatic on EDEQ-4 subscales, reported significantly more bulimic behaviors, and a greater

TABLE 2. Eating pathology by diagnostic group

	BN (<i>n</i> = 138)	EDNOS-BN (<i>n</i> = 57)	Significance ^a	Partial η^2 ^a
EDEQ-4 subscales (mean, <i>SD</i>)			$F_{(4,189)} = 4.19, p = .003$	.081
Restraint	4.0 (1.2)	3.7 (1.3)	$F_{(1,192)} = 2.53, p = .114$	.013
Eating concern	3.7 (1.3)	3.2 (1.4)	$F_{(1,192)} = 6.99, p = .009$	.035
Shape concern	4.7 (1.2)	4.8 (1.0)	$F_{(1,192)} = 0.36, p = .552$	.002
Weight concern	4.3 (1.2)	4.4 (1.3)	$F_{(1,192)} = 0.18, p = .674$	.001
EDEQ-4 behaviors (mean, <i>SD</i>) ² (30 days)			$F_{(4,190)} = 5.16, p < .001$	.098
OBEs	20.7 (27.2)	7.9 (9.8)	$F_{(1,193)} = 11.86, p = .001$	.058
SBEs	12.8 (14.9)	13.0 (13.9)	$F_{(1,193)} = 0.003, p = .958$	.000
Vomiting episodes	26.4 (41.7)	11.8 (14.9)	$F_{(1,193)} = 6.65, p = .011$	.033
Laxative episodes	3.4 (6.8)	1.4 (5.0)	$F_{(1,193)} = 3.89, p = .050$	.020
Lifetime history of anorexia nervosa	37 (26.8%)	7 (12.3%)	Fisher's exact $p = .037$	—

Note: BN = bulimia nervosa; EDNOS-BN = eating disorder not otherwise specified, bulimia nervosa type; *SD* = standard deviation; EDEQ-4 = Eating Disorder Estimation Questionnaire–Version 4; OBEs = objective binge eating episodes; SBEs = subjective binge eating episodes.

^aMultivariate tests indicated in bold.

^bRaw means and standard deviations presented. Analysis based on log-transformed frequencies.

TABLE 3. Other pathology by diagnostic group

	BN (<i>n</i> = 138)	EDNOS-BN (<i>n</i> = 57)	Significance	Partial η^2
Frost MPS (mean, <i>SD</i>)			$F_{(7,187)} = 0.92, p = .496^a$	.033 ^a
Concern over mistakes	31.1 (7.4)	30.6 (7.0)		.001
Personal standards	26.3 (5.4)	25.2 (6.0)		.008
Parental expectations	15.8 (4.4)	14.6 (5.4)		.013
Parental criticism	11.6 (4.3)	10.8 (4.8)		.006
Doubts about action	12.9 (3.5)	12.4 (3.4)		.005
Organization	23.7 (5.0)	23.7 (4.3)		.000
MPS total score	121.7 (21.0)	118.0 (20.1)		.007
BIS (mean, <i>SD</i>)			$F_{(4,190)} = 1.13, p = .343^a$	.023 ^a
Attention	2.5 (0.5)	2.5 (0.5)		.005
Motor	2.5 (0.5)	2.4 (0.4)		.011
Nonplanning	2.3 (0.5)	2.1 (0.4)		.021
BIS total	72.6 (11.6)	69.1 (10.7)		.019
MOCI (mean, <i>SD</i>)			$F_{(5,187)} = 1.87, p = .102^a$	.048 ^a
Checking	2.1 (2.1)	1.5 (1.8)		.022
Washing	2.3 (2.0)	2.2 (2.3)		.001
Repetition	2.8 (1.2)	2.9 (1.0)		.005
Doubting	3.0 (1.9)	2.9 (1.9)		.000
MOCI total	8.2 (5.3)	7.5 (5.4)		.004
Anxiety/Depression			$F_{(3,190)} = 1.07, p = .362^a$	.017 ^a
IDS	30.3 (12.6)	27.0 (12.7)		.015
SSAI	47.4 (13.4)	45.5 (11.7)		.005
STAI	55.1 (12.7)	52.3 (11.4)		.010
MAST/AD (mean, <i>SD</i>)	10.1 (12.1)	9.1 (13.3)	$F_{(1,193)} = 0.26, p = .616$	.001

Note: BN = bulimia nervosa; EDNOS-BN = eating disorder not otherwise specified, bulimia nervosa type; MPS = Multi-dimensional Perfectionism Scale; BIS = Barratt Impulsivity Scale; MOCI = Maudsley Obsessive-Compulsive Inventory; IDS = Inventory for Depressive Symptomatology; SSAI/STAI = Spielberger State-Trait Anxiety Inventory; MAST/AD = Michigan Assessment Screening Test/Alcohol-Drug.

^aMultivariate tests.

proportion had a lifetime history of AN in comparison to EDNOS-BN participants. In terms of the EDEQ-4 subscales, almost all the difference between diagnostic groups was accounted for in terms of the Eating Concerns subscale. For EDEQ-4 Behaviors, the difference between groups was mostly accounted for by OBEs and vomiting episodes.

General Psychopathology

As displayed in **Table 3**, no significant differences were observed between diagnostic groups on any measures of general psychopathology. Based on the partial η^2 values, the distinction between BN and

EDNOS-BN accounted for less than 5% of the criterion variance in all comparison measures.

Post Hoc Analyses

Post hoc analyses were conducted for the EDEQ-4 in an attempt to replicate findings from an adolescent BN sample that was stratified on the basis of purging with OBEs versus purging without OBEs⁴. These results are displayed in **Table 4**. EDNOS-BN participants who reported objectively large binge eating episodes (OBE; *n* = 34) were compared with those who did not report OBEs (*n* = 23). Results indicated greater EDE-Q Restraint subscale scores

TABLE 4. EDE-Q subscales for EDNOS-BN with OBEs and EDNOS-BN without OBEs

	OBEs (<i>n</i> = 34)	No OBEs (<i>n</i> = 23)	Significance
Dietary restraint	3.30 (1.36)	4.30 (.91)	$F_{(1,56)} = 9.38,$ $p = .003$
Weight concern	4.42 (1.37)	4.43 (1.08)	$F_{(1,56)} = .003,$ $p = .960$
Shape concern	4.66 (1.10)	4.93 (.76)	$F_{(1,56)} = 1.04,$ $p = .313$
Eating concern	3.02 (1.59)	3.43 (.95)	$F_{(1,56)} = 1.22,$ $p = .275$

Note: EDE-Q = Eating Disorder Examination Questionnaire; EDNOS-BN = eating disorder not otherwise specified, bulimia nervosa type; OBEs = objective binge eating episodes.

for EDNOS-BN participants who did not report OBEs (4.3 vs 3.3; $F^{1,55} = 9.38, p = .003$). In contrast to the primary analysis, there was no significant difference on the EDEQ-4 Eating Concern subscale between the two EDNOS-BN subgroups.

Conclusion

Findings from the present study confirm and extend our limited knowledge of the relationship between BN and EDNOS-BN. With the exceptions of ethnicity, medication use, history of AN, and eating concerns, BN and EDNOS-BN were statistically indistinguishable on all other demographic variables, SBEs, dietary restraint, shape and weight concerns, and comorbid personality/psychiatric comorbidity. Post hoc analyses for EDNOS-BN, with and without OBEs, indicated greater dietary restraint for EDNOS-BN participants who did not report OBEs, whereas eating concerns were similar for both EDNOS-BN subsamples.

The many shared features between BN and EDNOS-BN appear more significant than the differences, and serve to highlight the clinical significance of EDNOS. First, the EDNOS-BN group engaged in clinically meaningful degrees of both binge eating (Mean OBEs + SBEs = 21 episodes in 30 days) as well as purging (Mean vomiting + laxative use = 13 episodes in 30 days). The EDNOS-BN group was similarly impaired on most EDEQ-4 subscales as well as major areas of psychiatric comorbidity. EDNOS-BN participants' eating disorder symptoms were of sufficient subjective severity to warrant their involvement in psychotherapy to the same degree as their BN counterparts. In addition, a greater awareness of EDNOS cases is important as these individuals have been historically excluded from treatment outcome studies and exempt from third-party reimbursement. The finding that indi-

viduals with EDNOS-BN were not involved in pharmacotherapy at the same rate as individuals with BN is not necessarily evidence of milder functional impairment, as both reported similar comorbid psychopathology. Our findings dovetail with existing literature comparing full and subthreshold BN.^{5,6} Consequently, these results should prompt reevaluation of existing BN diagnostic boundaries (e.g., frequency criteria reduced from two to one bulimic episode per week, or eliminating the requirement that binge eating episodes involve the consumption of objectively large amounts of food).

In addition, post hoc analysis was conducted in an effort to provide more differentiation within the EDNOS category. Our findings underscore the need for greater nosological refinement within EDNOS, including the examination of EDNOS expressions such as purging in the absence of OBEs (e.g., EDNOS-purging only or "purging disorder").^{4,19}

Some limitations to our investigation should be mentioned. First, our findings require replication and would be strengthened by using the more robust interview-based EDE as part of the assessment regimen. Although the EDEQ-4 has been found to correlate significantly with the EDE interview,²⁰ the assessment of certain eating disorder symptoms using questionnaire rather than interview-based methods may result in inflated rates, particularly for binge eating episodes.^{20,21} More differences might have been observed between the BN and EDNOS-BN groups on the EDE compared with the EDEQ-4, and this possibility warrants investigation in future studies. Second, generalizability of these results is limited by the all-female, predominantly white sample. Because this is a cross-sectional comparative analysis, some degree of diagnostic fluidity over time cannot be ruled out. Longitudinal data would assist in elucidating whether EDNOS-BN may eventually evolve into BN. Third, we did not employ a control group, which limits the extent to which we can conclude that EDNOS-BN differs from a non-eating disorder comparison group. Finally, the modest sample size, particularly the EDNOS group, may have affected our ability to detect differences at statistically significant probability levels.

Results from this study underscore the need to improve our current understanding of the validity of eating disorder diagnostic criteria. Several avenues for further exploration of this issue can be suggested. For instance, examination of the functional aspects of purging in the absence of objective or subjective binge eating merits further study. In particular, it would be informative to compare those who purge without any sense of loss of con-

trol over eating with those who purge in response to subjectively large binge eating episodes. Unfortunately, our small EDNOS sample did not permit statistical exploration of this issue. In addition, as has been previously suggested,²² the examination of the applicability of specific psychotherapeutic interventions that are efficacious in BN for EDNOS-BN and other EDNOS presentations remains a priority.

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References

- Martin CK, Williamson DA, Thaw JM. Criterion validity of the multiaxial assessment of eating disorders symptoms. *Int J Eat Disord* 2000;28:303–310.
- Ricca V, Mannucci E, Mezzani B, Di Bernardo M, Zucchi T, Paionni A, et al. Psychopathological and clinical features of outpatients with an eating disorder not otherwise specified. *Eat Weight Disord* 2001;6:157–165.
- Turner H, Bryant-Waugh R. Eating disorder not otherwise specified (EDNOS): profiles of clients presenting at a community eating disorder service. *Eur Eat Disord Rev* 2004;12:18–26.
- Binford RB, Le Grange D. Adolescents with bulimia nervosa and eating disorder not otherwise specified-purging only. *Int J Eat Disord* 2005;38:157–161.
- Crow SJ, Agras WS, Halmi K, Mitchell JE, Kraemer H. Full syndromal versus subthreshold anorexia nervosa, bulimia nervosa, and binge eating disorder: a multicenter study. *Int J Eat Disord* 2002;32:309–318.
- Le Grange D, Loeb K, Van Orman S, Jellar C. Adolescent bulimia nervosa: a disorder in evolution? *Arch Pediatr Adolesc Med* 2004;158:478–482.
- Fairburn CG, Bohn K. Eating disorder NOS (EDNOS): an example of the troublesome “not otherwise specified” (NOS) category in DSM-IV. *Behav Res Ther* 2005;43:691–701.
- First MB, Spitzer RL, Gibbon M, Williams JBW. Structured Clinical Interview for DSM-IV Axis I Disorders, Patient Edition. New York: New York State Psychiatric Institute, Biometrics Research; 1995.
- American Psychiatric Association. Diagnostic and statistical manual of mental disorders (4th ed., rev.). Washington, DC: Author, 1994.
- Fairburn CG, Cooper, Z. The eating disorders examination (12th ed). In: Fairburn CG, Wilson GT, editors. *Binge eating: nature, assessment, and treatment*. New York: The Guilford Press, 1993, p. 317–331.
- Fairburn CG, Beglin SJ. Assessment of eating disorders: interview or self-report questionnaire? *Int J Eat Disord* 1994;16:363–370.
- Frost RO, Marten P, Lahart C, Rosenblate R. The dimensions of perfectionism. *Cogn Ther Res* 1990;14:449–468.
- Barratt ES. Impulsiveness substrates: arousal and information processing. In: Spence T, Izzard E, editors. *Motivation, emotion, and personality*. Amsterdam: Elsevier, 1985, p. 137–146.
- Rosotto E, Yager J, Rorty M. Impulsive and self-harm behaviours among women with bulimia nervosa. Presented at the 6th International Conference on Eating Disorders, New York, 1994.
- Westermayer J, Yargic I, Thuras P. Michigan Assessment-Screening Test for alcohol and drugs (MAST/AD): evaluation in a clinical sample. *Am J Addict* 2002;13:151–162.
- Rush AJ, Giles DE, Schlessler MA, Fulton CL, Weissenburger J, Burns C. The Inventory for Depressive Symptomatology (IDS): preliminary findings. *Psychiatry Res* 1986;18:65–87.
- Spielberger CD. Manual for the State-Trait Anxiety Inventory (STAI). Palo Alto, CA: Consulting Psychologists Press, 1983.
- Hodgson RJ, Rachman S. Obsessive-compulsive complaints. *Behav Res Ther* 1977;15:389–395.
- Keel PK, Fichter M, Quadflieg N, Bulik C, Baxter MG, Thornton L, et al. Application of latent class analysis to empirically define eating disorder phenotypes. *Arch Gen Psychiatry* 2004;6:192–200.
- Peterson CB, Miller KB. Assessment of eating disorders. In: Wonderlich S, Mitchell J, de Zwaan M, Steiger H, editors. *Eating disorders review*. I. Oxford: Radcliffe, 2005, p. 105–126.
- Wilson GT. Assessment of binge eating. In: Fairburn CG, Wilson GT, editors. *Binge eating: nature, assessment, and treatment*. New York: The Guilford Press, 1993, p. 227–249.
- Fairburn CG, Cooper Z, Shafran R. Cognitive behaviour therapy for eating disorders: a “transdiagnostic” theory and treatment. *Behav Res Ther* 2003;41:509–528.