

The Validity and Utility of Subtyping Bulimia Nervosa

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ABSTRACT

Objective: To review the evidence for the validity and utility of subtyping bulimia nervosa (BN) into a purging (BN-P) and a nonpurging subtype (BN-NP), and of distinguishing BN-NP from binge eating disorder (BED), by comparing course, complications, and treatment.

Method: A literature search of psychiatry databases for studies published in peer-reviewed journals that used the DSM-definitions of BN and BED, and included both individuals with BN-NP and individuals with BN-P and/or BED.

Results: Twenty-three studies compared individuals with BN-NP ($N = 671$) to individuals with BN-P ($N = 1795$) and/or individuals with BED ($N = 1921$), two of which reported on course, 12 on comorbidity and none on treatment response—the indicators for validity and

clinical utility. The differences found were mainly quantitative rather than qualitative, suggesting a gradual difference in severity from BN-P (most severe) through BN-NP to BED (least severe).

Discussion: None of the comparisons provided convincing evidence for the validity or utility of the BN-NP diagnosis. Three options for the position of BN-NP in DSM-V were suggested: (1) maintaining the BN-NP subtype, (2) dropping nonpurging compensatory behavior as a criterion for BN, so that individuals currently designated as having BN-NP would be designated as having BED, and (3) including BN-NP in a broad BN category. © 2009 American Psychiatric Association.

Keywords: bulimia nervosa; classification

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Introduction

In DSM-IV, two subtypes are identified for bulimia nervosa (BN): the purging (BN-P) and the nonpurging (BN-NP) subtype. Both are characterized by recurrent periods of binge eating and subsequent inappropriate compensatory behavior. The differ-

ence between the two lies in the type of compensatory behaviors in which individuals engage: self-induced vomiting or the misuse of laxatives, diuretics, or enemas in the case of BN-P, whereas in BN-NP other, nonpurging, types of compensatory behavior are used, such as fasting or excessive exercise. Persons with a diagnosis of BN-P may use purging as well as nonpurging types of compensatory behavior.

Mitchell observed that the common practice of clinicians and researchers is to focus on purging individuals, and warned that the validation of the use of purging as a subtyping criterion requires more information on nonpurging individuals.¹ Garfinkel et al. reviewed the changes in eating disorder diagnoses from DSM-III-R to DSM-IV, and noted as a problem the boundary between binge eating disorder (BED) and BN-NP as defined in DSM-IV². BED was introduced in the DSM-IV as a category requiring further study for possible inclusion as a formal disorder in the next edition. It defines a group of individuals who are distressed by recurrent binge eating but who do not engage in the recurrent inappropriate compensatory behaviors required of those with BN. Another difference between BN and BED is that in BN one of the criteria for making the diagnosis is that self-evaluation is unduly influenced by body shape and weight.

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The main purpose of the DSM is to be clinically useful, namely to improve the assessment and care of individuals with mental disorders. Therefore, a crucial element of the diagnostic criteria is predictive validity: a diagnostic label should make it possible for clinicians to obtain and apply information on course, complications, and effective treatment options.^{3,4}

We review the literature on the evidence for a subdivision of BN into a BN-NP and a BN-P subtype, and for the distinction between BN-NP and BED, with a focus on the diagnostic validity and clinical utility of the distinctions. The key question is: What is the evidence for the distinctiveness of BN-NP from BN-P and from BED in terms of the course of illness, complications, and treatment response?

Method

We searched the English literature for studies published in peer-reviewed journals that used the DSM-IV definitions of BN and BED, and that included in the same study individuals with BN-NP as well as individuals with BN-P and/or with BED. The following databases were searched: Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R) from 1950, PsycINFO from 1967, and EMBASE Psychiatry from 1997, all three searched to end of March 2009 with OvidSP, and Pubmed (<http://www.ncbi.nlm.nih.gov/pubmed/>). The search terms used were: bulimia and nonpurging ("non-purging," "nonpurging," "nonpurging," "BN NP," "BN-NP"), bulimia and fasting, bulimia, and exercise. The search was limited to publications on humans and written in English. The OvidSP search yielded 87 titles, the Pubmed search 150 titles. The identified publications were then screened for DSM-based diagnoses of BN and comparisons between individuals with BN-NP and individuals with BN-P, and between individuals with BN-NP and individuals with BED, with a focus on course, comorbidity, and treatment response. Publications that did not use DSM-criteria, that did not include BN-NP and that did not distinguish among BN-P and BN-NP were excluded from further scrutiny. Studies cited in the relevant publications were screened to identify additional publications that had not been found by the database search.

Results

Our search identified 24 articles on BN-NP: 23 that included in the same study individuals with BN-NP

as well as individuals with BN-P and/or BED,⁵⁻²⁷ and one article that studied only BN-NP.²⁸ In total, these included 694 (15.7%) subjects with BN-NP (23 in the article on BN-NP only), 1795 (40.7%) with BN-P, and 1921 (43.6%) with BED.

Nine of the 23 articles that addressed BN-NP as well as BN-P and/or BED reported on clinical presentation (eating disorder symptoms and associated biological, psychological, and demographic characteristics) only, and did not present results pertaining to course of illness, complications, or treatment response.^{5-7,9-12,19,26} One study combined BN-NP and BN-P subjects in the analyses.⁵ These studies and the one on BN-NP only²⁸ (10 in total) will not be discussed further.

The remaining 14 studies—six articles that studied BN-NP and BN-P,^{14,15,17,24,25,27} two articles that studied BN-NP and BED,^{8,23} and six articles that studied all three eating disorder categories^{13,16,18,20-22}—are presented in **Table 1**. Of these studies, two used DSM-III-R (APA, 1987) criteria,^{15,24} the other 12 used DSM-IV (APA 1994) criteria. Only a few studies provided details on the compensation behavior addressed, for example, Tobin et al.²²: "... vomiting, laxatives, daily fasting, diuretics, diet pills, and daily exercise of at least 1 h," Walters et al.²⁴: "These methods included vomiting, taking laxatives, fasting, strict dieting, or excessive exercising."

There were seven studies with fewer than 25 subjects with BN-NP,^{16-18,21-23,25} two with fewer than 25 subjects with BN-P,^{15,18} and one with fewer than 25 subjects with BED.¹⁸ Two studies addressed the course of the disorder,^{13,16} the other 12 provided information on complications of eating disorders. None of the studies compared the response with treatment between BN-NP, BN-P, and/or BED. In the following section, the results on course of illness and complications are reviewed according to the distinction between BN-NP and BN-P, and between BN-NP and BED.

Comparison Between BN-NP and BN-P

Course of Illness. Only two studies prospectively followed both individuals with BN-P and individuals with BN-NP to determine course of illness and outcome of the eating disorder.^{13,16} Both studies had a short follow-up duration of a year or less.

Hay et al. report that the stability of the eating disorder 1 year after recruitment into the study was comparable for women with BN-P and women with BN-NP.^{16,29} They used subgroups defined by cluster analysis, but also reported some information according to DSM-IV diagnostic groups. They report a significant difference in outcome over all

TABLE 1. Comparison of BN-NP, BN-P, and BED

Reference	Population	Methods	Results	Conclusions
Bulik et al. ¹³	General population sample, Norway: pregnant women (<i>N</i> = 41,157, majority ages 25–34, full age range not specified). Modified DSM-IV criteria. BN-P (118), BN-NP (109), BED (1405).	Longitudinal study: Follow-up of pregnancy cohort. Comparison pre-pregnancy (retrospective assessment: for 6 months before pregnancy) and during pregnancy (current assessment; mean 18.1 weeks gestation).	BN-NP higher remission rate than BN-P; BN higher remission rate than BED. New onsets in pregnancy much more common in BED than in other eating disorder.	Evidence for a gradual difference in prognosis: BN-NP more positive prognosis than BN-P, and surprisingly both more positive prognosis than BED. Generalizability beyond pregnant women unclear. Pregnancy risk factor for development of BED, not BN.
Corcos et al. ¹⁴	Patient sample, multicenter (France, Switzerland, Belgium): referrals to outpatient eating disorder clinics (<i>N</i> = 295 women, ages 15 and over). DSM-IV criteria. BN-P (202), BN-NP (68), AN-BP (25).	Cross-sectional study. Assessment of lifetime psychiatric diagnoses, life events, lifetime history of suicide attempt and suicidal ideation, self-injurious behaviors and other problems (semi-structured clinical interview, BDI, SCL-90). Comparisons between women who have and have not attempted suicide.	No direct comparisons BN-P to BN-NP. Comparable rates of attempted suicide (BN-P: 28.2%, BN-NP: 26.4%).	Limited use, because presentation of results focused on comparison yes/no attempted suicide and not on comparison BN-P versus BN-NP. No evidence for difference between BN-P and BN-NP in rate of attempted suicide.
Favaro et al. ²⁷	Patient sample, Italy: outpatient of eating disorder unit (<i>N</i> = 554; gender not specified, ages 12–61). DSM-IV criteria. AN-R (183), AN-BP (65), BN-P (244), BN-NP (62).	Cross-sectional study. Assessment of range of impulsive behaviors (self-injurious, externalizing, substance abuse) (semi-structured clinical interview, TPQ, SCL-90). Comparisons of diagnostic groups.	No separate analyses for BN-P versus BN-NP. Rates of impulsive behaviors higher in BN-P (67.6%) than in BN-NP (46.8%).	Evidence for more comorbid impulsive behavior in BN-P than in BN-P.
Garfinkel et al. ¹⁵	General population sample, Canada (<i>N</i> = 8,116 men and women, ages 15–64). DSM-III-R criteria. BN-P (17), BN-NP (45).	Cross-sectional study. Assessment of comorbid depression, anxiety disorders, substance abuse, psychiatric disability, and care utilization patterns (UM-CIDI + additional questions).	Very high rates of major depression, anxiety disorder, and alcohol dependence in both groups. BN-P significantly higher lifetime depression, alcohol dependence, current anxiety disorder, and lifetime and current social phobia. Both groups high rates of parental psychopathology versus general population. BN-P significantly higher rates of previous sexual abuse and frequent parental discord.	Small BN-P group. Evidence for gradual difference: BN-P relatively more comorbidity.
Hay and Fairburn ¹⁶	General population sample, UK: women with recurrent binge eating (<i>N</i> = 250, ages 16–35). DSM-IV criteria. BN-P (63), BN-NP (16), BED (63), ED-NOS (60), noncase (34).	Longitudinal study: Follow-up 1 year after recruitment. Assessment of general psychiatric symptoms, social functioning, self-esteem (BSI, SAS, Robson 12-item questionnaire). Comparison of groups.	BN-P more severe eating disorder symptoms overall, more severe general psychiatric symptoms and poorer social adjustment than BED. BN (-P and -NP) higher stability over time, worse outcome after 1 year than BED, but significance of difference unclear.	Small BN-NP group. Some evidence for a gradual difference of eating disorder severity from BN-P (most severe), through BN-NP to BED. Probably similar course over time for BN-P and BN-NP, distinct from BED.
Milos et al. ¹⁷	Patient sample, Switzerland: recruited from in- and outpatient populations, self-help groups, and through advertisements in local newspapers (<i>N</i> = 288 women, ages 17 and older). DSM-IV criteria. AN-R (38), AN-BP (49), BN-P (144), BN-NP (14), ED-NOS (43).	Cross-sectional study. Baseline data of prospective survey, partly retrospective. Assessment of psychiatric comorbidity (Structured Clinical Interview). Comparison of groups on suicide attempts and suicidal ideation. For some analyses combination of AN and BN subtypes to compare purgers and nonpurgers.	No significant differences in attempted suicide and suicidal ideation between BN-P and BN-NP. History of attempted suicide and repeated suicide attempts significantly more frequent in purging eating disorder (AN-BP or BN-P) than nonpurging eating disorder (AN-R or BN-NP).	Small BN-NP group. Some evidence for higher comorbidity in purging subtypes than in nonpurging subtypes (BN and AN combined).

TABLE 1. (Continued)

Reference	Population	Methods	Results	Conclusions
Murakami et al. ¹⁸	Patient sample, Japan: outpatients (<i>N</i> = 42, gender and age range not specified). DSM-IV criteria. AN-R (8), AN-BP (8), BN-P (11), BN-NP (2), BED (6), ED-NOS (7).	Cross-sectional study. Assessment of major depression and personality disorder (modified SCID-P and SCID-II, BDI, LOI). Combination of groups into purgers versus nonpurgers.	More borderline and avoidant personality disorders, depression and obsessionality in purgers than in nonpurgers.	Small groups. No separate comparisons versus BN-NP. Evidence for more comorbidity in purgers versus nonpurgers (AN and BN).
Ramacciotti et al. ⁹	Patient sample, Italy: outpatients of eating disorder unit (<i>N</i> = 50). DSM-IV criteria. BN-NP (25), BED (25).	Cross-sectional study. Assessment of comorbid depression, substance abuse, sexual abuse (BED Clinical Interview, Body Uneasiness test). Comparison of groups.	BN-NP and BED have comparable levels of social and occupational maladjustment.	No evidence for difference in comorbidity or maladjustment between BN-NP and BED.
Speranza et al. ²⁰	Patient sample, multicenter (Paris, Geneva, and Brussels): outpatients of eating disorder treatment facilities (<i>N</i> = 402, women, ages 15 and over). DSM-IV criteria. AN-BN (27), BN-P (213), BN-NP (73), BED (89).	Cross-sectional study. Assessment of depressive symptoms (BDI). Comparison of groups. For some analyses comparison of recent-onset (<2 years) binge eating subjects between groups using nonpurging versus mixed weight control strategies.	No separate analyses for BN-P versus BN-NP. High levels of depressive symptoms overall; no significant differences in depressive symptoms between eating disorder groups. Significantly lower level of depressive symptoms in recent-onset bingeing subjects with nonpurging weight control strategies than in subjects using mixed weight control strategies.	No separate comparisons versus BN-NP. Some evidence for more depressive symptoms in purgers versus nonpurgers (AN and BN).
Striegel-Moore et al. ²¹	General population sample, USA: women (<i>N</i> = 7369, 212 with current eating disorder, ages 18–40). DSM-IV criteria. BN-P (48), BN-NP (14), BED (150).	Cross-sectional study. Assessment of Axis I psychiatric disorders (SCID-IV). Comparison of groups.	The groups did not differ significantly on lifetime and/or current major depression, bipolar disorder, dysthymia, substance abuse, panic disorder, agoraphobia, social phobia, OCD, or on any Axis I disorder ever.	Small BN-NP group. No evidence for difference in comorbidity between BN-P, BN-NP or BED.
Tobin et al. ²²	Patient sample, USA: referrals to eating disorder clinics (<i>N</i> = 267, 95% women, age range not reported). DSM-IV criteria. BN-P (188), BN-NP (21), BED (31), ED-NOS (27).	Cross-sectional study. Assessment of comorbidity (BSI, BDI, SCL-90). Comparison of groups.	BED significantly less anxious than other groups. No differences in state or trait depression scores between the groups, or on other comorbidity as measured by SCL-90R. Fasting better predictor of depression than vomiting or laxative use.	Little support for subtyping BN. Some evidence for distinction BN versus BED.
Vervaeke et al. ²³	Patient sample, Belgium: in- and outpatients of eating disorder clinic (<i>N</i> = 409, men and women, age range not specified). DSM-IV criteria. BN-NP (17), BED (31).	Cross-sectional study. Assessment of comorbidity and personality (SCAN, TCI). Comparison of groups.	No differences were found with regard to feelings of sadness, anxiety, depression, or the presence of sleep disturbances, deliberate self-harm or drug abuse.	Small BN-NP group. No evidence for difference in comorbidity between BN-NP and BED.
Walters et al. ²⁴	General population, USA: Virginia twin register (<i>N</i> = 2,163 female twins, age range not specified). Modified DSM-III-R criteria. BN-P (54), BN-NP (54).	Cross sectional study. Assessment of comorbidity (clinical interview). Comparison of groups.	No significant differences for any of the variables considered.	No evidence for difference in comorbidity between BN-P and BN-NP.
Youssef et al. ²⁵	Patient sample, France: in- and outpatients of hospitals and medical centers (<i>N</i> = 152 patients with an eating disorder, and matched controls, females, ages 16–24). DSM-IV criteria. AN-R (66), AN-P (37), BN-P (40), BN-NP (9), control group (140).	Cross-sectional study. Assessment of comorbidity and personality (MINI, BDI, MMPI-2). Analyses per eating disorder group versus control group, comparing those with/without suicide attempts.	No direct comparisons between BN-P and BN-NP. Rates of suicide attempts seem slightly higher in BN-P (30.0%) than in BN-NP (22.2%). More suicide attempts in purgers than in nonpurgers (AN and BN).	Small BN-NP group. No direct comparisons between BN-P and BN-NP.

groups (BN-P, BN-NP, BED, ED-NOS, and noncases) studied, but do not specify which intergroup difference(s) is/are significant. The results suggest a gradual difference in recovery (noncase or recovered at outcome) from BN-P (lowest recovery rate) through BN-NP to BED/ED-NOS (highest recovery rate).

Bulik et al. studied the course of eating pathology during pregnancy of women who were retrospectively assessed as having an eating disorder for 6 months before pregnancy.¹³ Women with BN-NP had significantly higher remission rates of the eating disorder than women with BN-P. During pregnancy, restrictive food intake and, in particular, excessive exercise become increasingly difficult. It is therefore not surprising that those whose primary weight loss strategies are exercise and restriction show greater remission of these behaviors than those who adhere to self-induced vomiting or abused laxatives. The generalizability of these findings on eating disorder course to nonpregnant women is limited because of the emotional impact of the physical changes of pregnancy on women with an eating disorder.

Complications. Complications are problems that occur comorbid to the eating disorder. Comorbidity is an index for more severe course and outcome of mental disorders.³⁰ Eleven studies compared individuals with BN-P and individuals with BN-NP on comorbidity.

Corcos et al. made comparisons between women who had and women who had not attempted suicide.¹⁴ They did not make direct comparisons of BN-P with BN-NP, but they did provide rates of attempted suicide per diagnostic group. The rates of attempted suicide in women with BN-P and in women with BN-NP were similar.

Milos et al. and Youssef et al. also studied attempted suicide.^{17,25} Milos et al. found no significant difference in frequency of attempted suicide.¹⁷ However, the number of subjects with BN-NP in their study was low ($N = 14$). Like Corcos et al., Youssef et al. did not make direct comparisons of BN-P with BN-NP, but compared women who had attempted suicide with women who had not attempted suicide.^{14,25} The number of subjects with BN-NP in their study was low ($N = 9$). Hay and Fairburn found no significant differences in level of general psychiatric symptoms as measured with the Brief Symptom Inventory between the BN subtypes.¹⁶

Speranza et al. combined analyses on four eating disorder categories, and did not make separate comparisons between the BN subtypes.²⁰ This also

holds for Murakami et al. and Favaro et al.^{18,27} Murakami et al. only studied two cases of BN-NP.¹⁸ Favaro et al. did provide rates of impulsive behaviors per group which seemed higher in BN-P than in BN-NP.²⁷

Striegel-Moore et al. did not find significant differences in frequency of comorbid axis I diagnoses between BN-P, BN-NP, or BED.²¹ Their BN-NP group was small ($N = 14$). Tobin et al. and Walters et al. also found no significant difference in level of comorbid psychopathology as measured by the SCL or in comorbid axis I diagnoses between the BN subtypes.^{22,24}

Garfinkel et al. reported significantly higher rates of lifetime major depression, alcohol dependence, current anxiety disorders, lifetime, and current social phobia in women with BN-P than in women with BN-NP, in addition to already very high levels of major depression, anxiety disorders, and alcohol dependence in both groups.¹⁵ This could indicate a gradual difference between the BN subtypes. Their BN-P group was small ($N = 17$).

Comparison Between BN-NP and BED

Course. The follow-up studies discussed in the comparison between BN-NP and BN-P also compared BN-NP with BED.^{13,16}

Hay and Fairburn report a more benign 1-year outcome (higher remission rate, less severe eating disorder symptoms) in BED compared with BN-P and BN-NP.^{16,29} They used subgroups defined by cluster analysis, but also reported some information according to DSM-IV diagnostic groups. They found a significant difference in remission rates over all groups studied, but no specific information was provided on the intergroup differences. Thus, it remains unclear whether the difference in remission rate between BN-NP and BED is or is not significant.

Bulik et al. reported a significantly lower remission rate and many more new onsets during pregnancy for BED than for BN (both BN-NP and BN-P).¹³ The authors themselves wondered to what extent the appetite changes associated with pregnancy influenced the evaluation of binge eating. Again, the generalizability of these findings on the course of the eating disorder to nonpregnant women is unclear.

Complications. Eight studies compared individuals with BN-NP to individuals with BED on comorbidity. Ramacciotti et al., Santonastaso et al., Striegel-Moore et al., Vervaet et al., and Tobin et al. found no significant differences in comorbidity between

BN-NP and BED.^{21–23,26,31} Striegel-Moore et al., Ver-vaet et al., and Tobin et al. had small BN-NP groups ($N = 14, 17$, and 21 , respectively).^{21–23}

Murakami et al. made combined analyses on a number of eating disorder categories, but did not make separate comparisons with BN-NP.¹⁸ In addition, this study included only two individuals with BN-NP. Like Murakami et al., Speranza et al.²⁰ did not make separate comparisons with BN-NP.

Hay and Fairburn found a higher level of psychopathology (SCL general severity index) and poorer social adjustment in BN-P than in BED.¹⁶ Combined with the finding of a worse outcome (lower remission rates, more severe eating disorder symptoms) after a year for both BN subtypes compared with BED, this suggests a gradual difference in severity, with BN-P being most severe, through BN-NP to BED being least severe.

Discussion

The purpose of this review was to assess the evidence for the validity and utility of subtyping BN into a purging (BN-P) and a nonpurging (BN-NP) subtype, and for distinguishing between BN-NP and BED. We have focused on the literature that compared BN-NP with BN-P or BED with regard to course of illness, complications, or treatment response.

The most striking finding is the surprisingly low number of studies that provide information on the validity and utility of the BN-NP subtype in the 15 years since its introduction in DSM-IV. In particular, there is a near-total lack of studies that provide information on course and a total lack of studies pertaining to treatment response, the two types of information most pertinent to clinical practice. In the literature spanning the period of 1992 to the first quarter of 2009, only 23 studies were identified that included subjects with BN-NP as well as subjects with BN-P and/or BED. Nine provided no information that was relevant for our questions on the validity and utility of BN-NP. None of the remaining studies addressed treatment response, and only two addressed the course of the eating disorder. Thus, not much has changed since Mitchell noted that more information was needed on nonpurging individuals.¹

Possibly BN-NP is a rare diagnosis. Cooper and Fairburn argued that the BN-NP diagnosis lacks utility because only a few cases were identified.³² Fichter et al. used both the fact that the diagnosis

BN-NP is rarely used clinically, and the diagnostic overlap with BED, as arguments to discard it as a relevant category for research.³³ The rarity of the diagnosis is confirmed in our review that required the study inclusion of patients with BN-NP: in a period of 16 years of research the studies found contained only 694 patients with BN-NP. In these studies, the patients with BN-NP were greatly outnumbered by patients with BN-P ($N = 1795$) or BED ($N = 1921$).

Another possible reason for the lack of data on individuals with BN-NP may be a problem in diagnosing these subjects. Individuals who would qualify for the diagnosis BN-NP may go unnoticed or be wrongly diagnosed as BED or ED-NOS as a result of incomplete assessment of nonpurging compensatory behaviors. Both dieting and exercising are common in the general population, and are not necessarily pathological. There is no clear criterion to decide at what point the amount of exercising and dieting exceeds a cut-off point and becomes abnormal. This does not mean that nonpurging compensatory behaviors are clinically irrelevant. A number of studies have provided information that both purging and nonpurging compensatory behaviors are important clinical markers, for example, they both have high rates of comorbidity (see Table 1); their frequency is associated with severe maladaptive core beliefs³⁴ and they are associated with impaired social functioning.³⁵ The lack of clear definitions of nonpurging compensatory behaviors combined with their clinical relevance highlights the need for better diagnostic criteria.

Although the number of subjects with BN-NP is generally lower than that of BN-P and BED, in some studies the rates are comparable to, or in favor of, BN-NP, notably for three of the five general population studies. This may be a result of the more standard use of (semi-) structured diagnostic interviews in this type of study, in which the presence of nonpurging compensatory behaviors is routinely checked. Again, this calls for increased attention to the formulation of clear and easy-to-apply diagnostic criteria for nonpurging compensatory behaviors.

There are a number of options regarding the position of BN-NP in future diagnostic systems, for example, DSM-V:

1. Maintain the current situation by keeping BN-NP as a subtype separate from BN-P as in DSM-IV, that is, a distinction between purging and nonpurging types of compensatory behavior in people who binge eat.

2. Eliminate nonpurging compensatory behavior as a diagnostic criterion. Individuals receiving a diagnosis of BN-NP in DSM-IV would be designated as having BED.
3. Inclusion of BN-NP in a broad BN category, as suggested by Walsh and Sysko, where a combination of binge eating with only non-purging forms of compensatory behavior would be considered an atypical form.³⁶ This would require a clear definition of the normal/abnormal boundaries of food restriction and exercising.

All options require more research on their clinical utility. The lack of research on BN-NP in the past 16 years does not favor option 1. In our review, there is some support for a hierarchy in severity, with purging behavior indicative of more severe psychopathology than nonpurging behavior, and multiple compensatory behaviors indicative of more severe psychopathology than a single compensatory behavior. Some of the reported study results suggest that BN-NP is closer to BN-P than to BED, but other studies fail to find significant differences between BN-P and BN-NP or between BN-NP and BED. Thus, our review is inconclusive as to a choice between options 2 and 3.

Alternative models for subtyping BN have been suggested, such as the distinction between BN with or without depressive affect,^{37–39} between long-term (laxatives, diet-pills), short-term (vomiting), and nonpurging compensatory behaviors,⁴⁰ and between purger, binger, and binge-purger subtypes.⁴¹ As long as there is no convincing evidence for a distinct course, different complications or a distinct treatment response for the subtypes identified in these models, each one could be encompassed in a broad definition of BN.

Conclusion

In summary, at present, there is very little evidence for the validity and utility of a BN-NP subtype. There is also insufficient and inconclusive evidence to decide whether patients who display nonpurging types of compensation behavior should be categorized as BN or as BED. In DSM-V more attention should be paid to the requirement that eating disorder categories and their subtypes meet the criterion of predictive validity, namely that they can be distinguished one from another on course, comorbidity, treatment response or a combination of these. The description and delineation of nonpurging

compensatory behaviors needs to be refined. It might be useful to note for each patient on a dimensional scale the frequency of binge eating, and the frequency and type of inappropriate compensatory behavior.

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