Published in final edited form as:
Int J Eat Disord. 2009 December ; 42(8): 754–764. doi:10.1002/eat.20722.

Broad Categories for the Diagnosis of Eating Disorders (BCD-ED): An Alternative System for Classification

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Abstract

Eating Disorder Not Otherwise Specified (EDNOS), a residual category in DSM-IV, is the most commonly used eating disorder diagnosis in clinical settings. However, the features of individuals with EDNOS are heterogeneous and difficult to characterize. A diagnostic scheme, termed Broad Categories for the Diagnosis of Eating Disorders (BCD-ED), is proposed to diminish use of the EDNOS category markedly while preserving the existing eating disorder categories. The BCD-ED scheme consists of three broad categories, in a hierarchical relationship, consisting of: Anorexia Nervosa and Behaviorally Similar disorders, Bulimia Nervosa and Behaviorally Similar Disorders, Binge Eating Disorder and Behaviorally Similar Disorders, and a residual category of EDNOS. The advantages and disadvantages of adopting this scheme for DSM-V are considered, and issues relevant to BCD-ED are discussed. Specifically, we review the proportion of individuals with DSM-IV EDNOS that would be re-classified under the BCD-ED system, support for the hierarchy of the three categories, and the potential risk of "overdiagnosis."

INTRODUCTION

Beginning with the 3rd edition, published in 1980, the Diagnostic and Statistical Manual (DSM) for Mental Disorders of the American Psychiatric Association (1) has formally recognized two specific categories for the diagnosis of eating disorders, Anorexia Nervosa (AN) and Bulimia Nervosa (BN, termed Bulimia in DSM-III and Bulimia Nervosa in DSM-IIIR and DSM-IV). In DSM-IV (2), all other clinically significant eating disorder problems are captured by the residual category of Eating Disorder Not Otherwise Specified (EDNOS). Criteria for a provisional eating disorder diagnosis, Binge Eating Disorder (BED), are provided in an appendix of DSM-IV, as a specific example of EDNOS and as a category in need of further study. The diagnostic criteria for eating disorders of DSM-IV closely resemble those of DSM-IIIR (3), as, in the development of DSM-IV, a conservative standard for change was adopted, with alterations to the DSM-IIIR criteria recommended only to resolve generally agreed upon problems or in light of convincing empirical support for change (4). Therefore, the DSM criteria for the diagnosis of AN and BN have not changed substantially since 1987. With the publication of DSM-V slated for 2012, it is timely to consider changes in the criteria.

Significant attention has been devoted to problems surrounding the use of the EDNOS category. EDNOS is likely the most commonly used eating disorder diagnosis in clinical settings, with prevalence rates ranging as high as 50% to 70% of all individuals with eating

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disorders (5–6). However, few research studies include individuals with EDNOS (7), and, thus, much less is known about this diagnostic category, especially the anticipated course, outcome, or treatment options for individuals with EDNOS (8). Furthermore, the features of this group are heterogeneous and difficult to characterize (7;9–11). The fact that a 14 year old girl meeting all the criteria for AN except that she reports menstrual activity and a 46 year old man with BED would both receive the diagnosis of EDNOS highlights the heterogeneity of this category and its limitations.

A range of solutions has been suggested to address the limitations of the current categories for eating disorders in DSM-IV, from small alterations to the existing diagnostic criteria (e.g., removing amenorrhea from the criteria for AN; 12), to focusing on the shared features of AN, BN, and EDNOS and considering eating disorders as a single category (13). However, none of the options suggested to date retains the core features of the current diagnostic system, specifically distinguishing "classic" AN, BN, and BED, while also significantly reducing the number of individuals within the EDNOS category. The proposal described below, termed Broad Categories for the Diagnosis of Eating Disorders (BCD-ED), offers an approach to achieving these goals. However, this scheme also introduces potential problems.

Proposed Scheme of Three Broad Eating Disorder Categories: BCD-ED

In brief, the BCD-ED scheme consists of three broad categories for individuals with an eating disorder (14), in a hierarchical relationship, consisting of:

A. Anorexia Nervosa and Behaviorally Similar Disorders (AN-BSD). An eating disorder category characterized by the restriction of food intake relative to caloric requirements resulting in the maintenance of an inappropriately low weight, not better explained by a general medical condition or another psychiatric disorder. The prototype for this category is an individual meeting DSM-IV criteria for AN.

B. Bulimia Nervosa and Behaviorally Similar Disorders (BN-BSD). An eating disorder category characterized by recurrent out of control eating and the recurrent use of inappropriate purging methods to control eating or weight. The prototype for this category is an individual meeting DSM-IV criteria for BN.

C. Binge Eating Disorder and Behaviorally Similar Disorders; (BED-BSD). An eating disorder characterized by recurrent episodes of out of control eating. The prototype for this category is an individual meeting DSM-IV criteria for BED.

D. Eating Disorder Not Otherwise Specified (EDNOS). A residual diagnostic category for all other individuals with a clinically significant eating disorder.

Three major questions emerged in considering the BCD-ED proposal. First, what proportion of individuals classified as having EDNOS according to DSM-IV would be re-classified if the three category system were adopted? Second, is there support for the hierarchy (i.e., justification for the AN-BSD category to be considered more severe than the BN-BSD category and for the BED-BSD category to be considered the least severe)? And third, would this scheme lead to "overdiagnosis," that is, to an inappropriate number of individuals receiving a diagnosis of an eating disorder?

METHODS

The BCD-ED scheme is described in detail in Appendices I and II.

As part of the initial deliberations of the Eating Disorders Work Group for DSM-V, we conducted a literature review to attempt to address the three aforementioned questions and to

determine whether the BCD-ED proposal could be supported by existing data. We found articles on EDNOS by searching computer databases (e.g., MEDLINE, PsychInfo, ISI Web of Science) and reviewing the reference sections of published literature reviews or studies of EDNOS. Search terms included: EDNOS, DSM-IV, and eating disorder diagnosis. Articles were reviewed if they were relevant to one of the three questions described above, and the results of our review are described below. We excluded papers that focused on a single diagnosis (e.g., BN and variants of BN), or focused primarily on individuals with a lifetime eating disorder diagnosis rather than a current diagnosis.

RESULTS

1. What proportion of individuals with EDNOS would be re-classified if the three category system were adopted?

A number of published manuscripts on EDNOS provide information that is relevant to this question (Table 1). Based on these data, the BCD-ED proposal appears likely to re-classify the overwhelming majority of adults with EDNOS according to DSM-IV presenting to eating disorder clinics into one of the three broad categories.

Investigators have examined the characteristics of individuals with relatively broadly defined eating disorders and used analytic techniques such as factor or latent class analysis to assess whether these characteristics can help organize individuals into categories. Several of these studies have yielded empirically derived categorical structures that resemble the three-category proposal of the BCD-ED (11;15–17), while others support the separation of DSM-IV AN, BN, and BED, but not distinctions between full and partial syndrome cases (18).

Several other issues are suggested by these studies. The findings reported in Table 1 are likely influenced by the validators chosen in each analysis, and, in particular, the focus on classifying individuals using measures of eating disorder specific and general psychopathology. However, no studies include the validators of differential medical morbidity or mortality, which are of crucial importance for individuals at a low-weight. More generally, almost all of the validators used in the studies presented in Table 1 are cross-sectional symptom measures and do not assess course, outcome, or treatment response, parameters that are among the most important validators to consider in assessing changes to the DSM. Therefore, grouping individuals with common symptoms together according to the BCD-ED scheme is generally supported by extant data, but it is far from certain that the symptoms of all individuals within a broad category would follow a similar course or respond to similar treatment. For example, it is not clear how closely individuals who engage in recurrent purging by abusing laxatives two times a month resemble individuals with DSM-IV BN in regard to treatment responsiveness to cognitive behavioral therapy or antidepressant medication. In addition, the studies included in the review fail to provide any information relevant to children, and only offer limited information about adolescents with eating disorders.

2. Is there support for the hierarchy?

A number of clinical features and behaviors are shared across the eating disorders (e.g., over-evaluation of shape and weight; binge eating, 13). In DSM-IV, an individual experiencing frequent binge eating and purging behaviors could be given a diagnosis of either BN or of AN, binge-purge subtype (AN-B/P). Although there are other small differences in the required diagnostic characteristics, the salient distinguishing feature between these categories in DSM-IV is weight. If the individual's weight was below 85% of expected, the AN-B/P diagnosis would likely be appropriate; this hierarchy in DSM-IV,

which is implemented via Criterion E for BN, reflects the major impact of low weight on a range of important clinical phenomena and complications. Similarly, in the BCD-ED scheme, individuals would not be assigned to multiple categories, but rather, be assigned to a single category on the basis of a hierarchical progression.

Only limited data are available about the clinical characteristics or treatment response of individuals with a clinically significant eating disorder who do not meet the existing criteria for AN, BN, or BED (7;10). Therefore, we reviewed data evaluating whether these three DSM-IV categories, which are the prototypes for the three broad categories in BCD-ED, can reasonably be hierarchically arranged. We extrapolated these results to the BCD-ED proposal, assuming that other individuals in the broad categories would exhibit symptoms and complications that bear some similarity to those of the prototypes.

Our review did not identify any empirical studies that directly compared individuals with AN, BN, and BED to evaluate whether AN can be considered more severe than the other eating disorder diagnoses. However, high mortality rates (31), significant risk for medical complications (32), low treatment response rates (e.g., 33), and high rates of relapse observed among individuals with AN (e.g., 34–35) support designating the AN-BSD category as the most severe in the BCD-ED proposal, and therefore having the highest position in the hierarchy. Additional support for the hierarchical arrangement of the BCD-ED scheme is provided by data suggesting that individuals who would be classified in the BN-BSD category experience greater functional impairment than those who would be classified in the BED-BSD category (36). However, distinctions between these categories over time are less clear, as some studies indicate that individuals with BN (non-purging and purging) experience more severe eating disorder symptoms and a poorer prognosis in comparison to individuals with BED over a one- and five-year follow-up, respectively (21;37), but others (38) do not support differences between BN non-purging and BED over a longer follow-up (12 years). Individuals in one of the three categories of the BCD-ED scheme and individuals with other forms of less severe dieting and eating pathology appear to be appropriately differentiated on the basis of a community study by Duncan and colleagues (2007; 39). Although these studies do not directly address the hierarchical relationship between the categories in the BCD-ED scheme, the data on course, outcome, and treatment response among the three prototype eating disorders described in DSM-IV do support arranging AN-BSD, BN-BSD, and BED-BSD in order of severity.

3. Would the BCD-ED scheme lead to “overdiagnosis”?

Overdiagnosis is an issue of some concern in considering the BCD-ED proposal. The BCD-ED categories are broader than the DSM-IV diagnoses, and will result in a larger number of individuals receiving a formal eating disorder diagnosis; indeed, this is how the BCD-ED scheme would dramatically reduce the number of individuals in the EDNOS category. Much more than in DSM-IV, in the BCD-ED scheme, clinical judgment would play a major role in determining whether an individual’s symptoms met criteria for an eating disorder. The AN-BSD category would require the clinician to assess whether the individual’s weight is “inappropriately low.” The BN-BSD category would require a judgment of whether the recurrent out of control eating and use of inappropriate compensatory behaviors (purging) occur at a sufficient frequency and severity to merit a diagnosis. Moreover, the BED-BSD category would require the clinician to judge whether recurrent out of control eating constituted a problem of clinical severity. DSM-IV provides much more clearly defined boundaries. For AN, failure to maintain body weight at 85% of expected is suggested as a guideline. For BN, individuals are required to engage in binge eating and inappropriate weight control methods, on average, at least twice weekly over three months. Similarly, for BED, binge eating is required to occur at a minimum of two days a week over 6 months. In

addition, all the current categories require additional symptoms, such as overconcern about shape and weight for AN and BN.

Very limited empirical data are available to estimate the number of individuals who might receive a diagnosis in the BCD-ED scheme who would not generally be regarded as having a mental disorder. Therefore, a complete assessment of this issue is not possible on the basis of the extant literature on eating disorders. Overdiagnosis may be most relevant to the BED-BSD category due to the prevalence of overweight and obesity among the population in developed nations, and the fact that out of control eating may be more common among individuals at higher body weights. A recent epidemiological study by Ackard and colleagues (2007; 40) found that between 3.3% and 11.0% of 4,746 adolescents endorsed binge eating with a loss of control, which suggests that even with the broadest criterion, the proportion of the population classified within the BED-BSD category might be modest. One possible solution to address overdiagnosis is to include an explicit criterion for severity and/or impairment resulting from the eating disorder such as those in the DSM-IV criteria for BED.

Functional impairment is a crucial component of any psychiatric disorder, and in defining a "mental disorder," DSM-IV specifies that an individual with a disorder must experience clinically significant symptoms and distress or disability (e.g., functional impairment). Some diagnostic categories include a criterion based on this principle, such as Specific Phobia, which requires significant interference with normal routine functioning, relationships, or marked distress. The DSM-IV criteria for eating disorders do not include an explicit criterion of functional impairment, or describe examples of ways in which the eating disorder could impact functioning. Consequently, this criterion is inconsistently applied, especially for the diagnosis of EDNOS. Hudson and colleagues (2007; 36) included an assessment of impairment in role functioning related to home, work, personal life, or social life in a recent epidemiological study and observed that the majority of individuals with BN, BED, or any binge eating reported impairment in at least one area of functioning (78.0%, 62.6%, and 53.1%, respectively), although fewer individuals with subthresold BED experienced impairment (21.8%). Recently Bohn and colleagues developed an assessment (Clinical Impairment Assessment; CIA 3.0; 41–42) that measures psychosocial impairment for eating disorders, and could be used to quantify the effect of symptoms on functioning (e.g., affected work performance, interfered with relationships with others, etc.).

To reduce the likelihood of overdiagnosis in the BCD-ED scheme, clinically significant distress or functional impairment would be required. Hudson and colleagues (2007; 36) identified a prevalence of 1.2% for subthreshold BED, and 4.5% for any binge eating, and if the assessment of impairment is used as a proxy for functional impairment, the maximum number of individuals included in the BED-BSD category would be only 0.34% of individuals in the community with subthreshold BED and 2.4% of individuals with any binge eating. Thus, for symptoms to merit a diagnosis of an eating disorder in the BCD-ED scheme, individuals would be required report significant distress and/or have evidence of impairment related to their eating disturbance in one or more areas of functioning. For overweight or obese individuals, the simple expression of distress about their weight would not suffice; the distress must be associated with dysfunctional eating behaviors (i.e., binge eating). Functional impairment could be inferred when the eating disturbance affects health (e.g., electrolyte imbalance, erosion of tooth enamel), social functioning (e.g., impaired ability to tolerate eating in social settings, not going out with others), or produces financial problems (e.g., debt from buying food for binge eating). Functional impairment in BED-BSD could result, for example, from rapid weight gain during periods of frequent binge eating or social withdrawal.

CONCLUSION

The BCD-ED system appears to have a number of advantages, most notably reducing the number of individuals who would receive an EDNOS diagnosis, while preserving a three-category system resembling that of DSM-IV. This scheme also offers an advantage for diagnosing individuals with eating disorders outside of specialist settings, where a comprehensive psychiatric assessment may not be feasible (e.g., primary care). Individuals can be grouped into a broad category (e.g., AN-BSD) using relatively limited information, including body mass index, clinically significant distress or functional impairment, and ruling out other Axis I and general medical conditions. The BCD-ED scheme also offers more specific diagnostic information by including sub-groups within the broad categories, which could be used to inform clinical care.

However, there are also a number of concerns about adopting this system. Individuals classified in one of the broad categories of the BCD-ED scheme (e.g., AN-BSD) may exhibit a different symptom constellation than prototypic individuals with DSM-IV defined eating disorders (e.g., AN), and may not share all of the characteristics of these individuals, including the course and outcome of their eating disorder. Thus, since the existing literature base on DSM-IV AN will likely not apply to all individuals who are included in the AN-BSD category, clinicians may be misguided in their recommendations regarding treatment. Further, as data on the clinical characteristics of EDNOS are limited, the designation of several of the proposed sub-groups in the BCD-ED scheme is based more on clinical anecdote than on an established literature. The possibility of overdiagnosis, as noted above, is another concern with the BCD-ED scheme, but might be satisfactorily addressed through the use of a robust measure of clinically significant distress and impairment.

In addition, other options exist for the organization of the diagnostic criteria proposed in Appendix II. For example, the subgroup AN-BSD with significant weight loss but remaining at or above minimally acceptable body weight (nnn.13) might be incorporated into Typical Anorexia Nervosa (nnn.11) with a ‘novel’ definition of minimally acceptable weight, or into AN-BSD-NOS (nnn.14). The proposed Typical Bulimia Nervosa (nnn.21) and Bulimia Nervosa, low frequency (nnn.22) subgroups could be combined into a broader Bulimia Nervosa subgroup. Similarly, Typical Binge Eating Disorder (nnn.31) and Binge Eating Disorder, low frequency (nnn.32) could be joined. The clinician could specify the frequency of binge or out of control eating episodes and of purging behavior, rather than assigning individuals with episodes occurring less than once per week to a different subgroup of BN-BSD.

For the purging disorder subgroup (nnn.23), it might not be appropriate to require loss of control eating as a diagnostic criterion, as some studies have not required the presence of such eating episodes (27). Also, individuals with purging disorder have been grouped with individuals with AN in some empirical studies (45–46), suggesting that this subgroup might be better located within AN-BSD rather than within BN-BSD as it is in the current proposal.

Other options could be considered for the nosological placement of subgroups within the BCD-ED scheme, including non-purging BN. In the current proposal, recurrent purging behavior is a required feature of the BN-BSD category, implying that non-purging BN is better grouped with BED than with BN; however, some data suggest non-purging BN to be intermediate in severity between BN and BED (21). As with other decisions involved in the construction of BCD-ED, this is at least somewhat arbitrary due to limited research, and might be reconsidered on the basis of additional information.

The BCD-ED scheme provides a cross-sectional categorization of the eating disorders for clinical purposes, and does not address diagnostic crossover -- the migration of individuals

between categories. In addition, this scheme does not address the definition of recovery from an eating disorder; therefore, like DSM-IV, it does not provide criteria for when an individual should no longer be categorized as having an eating disorder or moves from one category to another. Investigators may wish to develop more stringent and more explicit inclusion and exclusion criteria, such as those employed for the prototypical categories described in the three broad categories. Finally, the BCD-ED would be a major change in how eating disorders are categorized, and would be best implemented if similar changes were made throughout DSM-V. These concerns, and others noted above, must be weighed against potential gains before a decision is made to incorporate the BCD-ED scheme in DSM-V.

Acknowledgments

RS is supported, in part, by 5T32MH015144 from the National Institutes of Health.

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Appendix I: Overview of Broad Categories for Eating Disorders Diagnoses within the BCD-ED Scheme

The three categories within the BCD-ED scheme: AN and Behaviorally Similar Disorders (AN-BSD), BN and Behaviorally Similar Disorders (BN-BSD), and BED and Behaviorally Similar Disorders (BED-BSD), are described in greater detail below. Each category includes a “prototypical” or “classic” case in the category, along with information about individuals with other symptom presentations that might also be grouped within the same category. In the explanation of the BCD-ED scheme, we use the phrase “binge eating” to indicate binge

episodes that are characterized by the consumption of an objectively large amount of food in a discrete period of time while experiencing a sense of loss of control. The phrase "out of control eating" refers to episodes during which an individual experiences a sense of loss of control during the consumption of an amount of food that is not necessarily objectively large.

Anorexia Nervosa and Behaviorally Similar Disorders (AN-BSD)

To be classified in this category, individuals must meet two criteria: (1) restriction of food intake (e.g., severe self-imposed dieting) relative to caloric requirements resulting in the maintenance of an inappropriately low body weight for the individual taking into account age and height; the maintenance of the inappropriately low weight is not better accounted for by another Axis I disorder or a general medical condition, and (2) clinically significant distress or functional impairment related to the eating disturbance.

The *prototype* for this category meets traditional criteria for AN, including (1) failure to maintain body weight at or above a minimally normal weight for age and height (e.g., weight loss leading to maintenance of body weight less than 85% of that expected; or failure to make expected weight gain during period of growth, leading to body weight less than 85% of that expected), (2) displaying behaviors consistent with an intense fear of gaining weight or becoming fat, even though underweight (e.g., restriction of food intake despite consequences), (3) a disturbance in the experience of body weight or shape, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of low body weight. Postmenarcheal females may experience amenorrhea, but it is not required.

Individuals would still be grouped in the AN-BSD category if they had lost a significant amount of weight but were at or above a minimally acceptable body weight (e.g., 85% of expected), did not have amenorrhea, or failed to endorse an intense fear of gaining weight or offer evidence of the over-evaluation of shape and weight (e.g., 43). If the AN-BSD category were applied to younger children and adolescents, clinicians would need to evaluate whether body weight is inappropriately low for the individual's age, and the calculation of a body mass index-for-age percentile may be required. Please refer to Appendix II for the diagnostic criteria for the AN-BSD category.

Bulimia Nervosa and Behaviorally Similar Disorders (BN-BSD)

To be included in the BN-BSD category, individuals must meet two criteria: (1) recurrent episodes of out of control eating and recurrent use of inappropriate purging methods to control weight or shape and/or the absorption of food; these disturbances are not better accounted for by another Axis I disorder or a general medical condition, and (2) clinically significant distress or functional impairment related to these behaviors.

A *prototypical* patient in this category would meet classic criteria for BN, and experience recurrent episodes of binge eating accompanied by recurrent inappropriate compensatory purging behavior in order to prevent weight gain or to control eating, shape, or weight, such as self-induced vomiting, misuse of laxatives, diuretics, enemas, or other medications. An episode of binge eating is characterized by both of the following: (a) eating, in a discrete period of time (e.g., within any 2-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances, and (b) a sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating). The binge eating and inappropriate compensatory behaviors both occur, on average, at least once a week for 3 months (51). The patient's self-evaluation is unduly influenced by body shape and weight,

and the behavioral disturbances do not occur exclusively while the patient is at a seriously low weight.

Individuals may also be classified in this category if they experience recurrent binge or out of control eating and purging episodes that occur less than once a week over a three month period or if they do not endorse an undue influence of shape and weight on their self-evaluation. Individuals meeting criteria for the AN-BSD category would be excluded from the BN-BSD category. Individuals with purging disorder (normal-weight individuals with recurrent episodes of purging) would be classified in this category. Refer to Appendix II for the diagnostic criteria for the BN-BSD category.

Binge Eating Disorder and Behaviorally Similar Disorders (BED-BSD)

To be included in the BED-BSD category, individuals must meet two criteria: (1) engage in recurrent episodes of out of control eating not better accounted for by another Axis I disorder or a general medical condition; during these episodes, the individual endorses the feeling that they cannot stop or control their eating; and (2) experience clinically significant distress or functional impairment directly related to the eating disturbance. Other indicators that eating is experienced as out of control include features such as eating more rapidly than usual, eating until uncomfortably full, eating large amounts of food in the absence of physical hunger, eating alone because of embarrassment, or feeling disgusted, depressed, or very guilty after eating. Recent studies have suggested that the overvaluation of shape and weight may be important as a mediator between obesity and functional impairment (49), and in differentiating individuals with BED on the basis of associated psychopathology and treatment response (50). However, as the data addressing the importance of overvaluation of shape and weight among individuals with BED are somewhat limited, this construct is not included as a diagnostic specifier in the BED-BSD category.

A *prototypical* patient in this category would describe symptoms consistent with those for DSM-IV BED, including episodes of binge eating during which an objectively large amount of food is consumed, accompanied by a sense of loss of control, that occur, on average, at least once a week for a three month period (51); it should be noted that the DSM-IV criteria focused on a 6 month interval. The binge eating episodes are associated with three or more of the specific features associated with binge eating described above (e.g., eating rapidly) and cause the patient significant distress or impairment.

The presence of excess body weight (obesity) does not provide sufficient evidence for inclusion in the BED-BSD category. A clinician must also determine that the individual experiences specific episodes of eating accompanied by a loss of control as described above and distress or impairment related to the out of control eating episodes, not simply attributable to being overweight.

For individuals in the BED-BSD category, out of control eating episodes are not associated with recurrent purging (e.g., vomiting). Individuals may be classified in this category if they experience recurrent out of control eating episodes and engage in fasting or excessive exercise, either generally, or to compensate for particular episodes of out of control eating. In DSM-IV, individuals with this pattern of behavior were considered to have non-purging BN; however, some of the scant information published about the characteristics of individuals with non-purging BN suggests they more closely resemble individuals with BED, and they are therefore included in the BED-BSD category. Individuals meeting criteria for either AN-BSD or BN-BSD would not also be classified as BED-BSD.

Eating Disorder Not Otherwise Specified (EDNOS)

As some individuals may experience a clinically significant eating disorder but not meet criteria for one of the categories in the BCD-ED proposal, the diagnosis of EDNOS would be retained. Individuals with an eating disorder, or a "persistent disturbance of eating or eating-related behavior that results in the altered consumption or absorption of food and that significantly impairs physical or psychosocial functioning…not secondary to any recognized general medical disorder or any other psychiatric disorder" (14), who cannot be classified into one of the three categories described above, would receive a diagnosis of EDNOS. Examples of EDNOS might include the recurrent chewing and spitting of food or night eating syndrome.

Use of the Three Broad Categories System

When using the BCD-ED scheme, clinicians would assess the following: (1) body mass index, (2) frequency and size of episodes of out of control eating, (3) frequency and nature of inappropriate compensatory behaviors (e.g., self-induced vomiting, laxative use), (4) level of concern about body shape and weight, and (5) degree of distress and impairment related to eating disorder symptoms. Using the information obtained, clinicians would compare reported symptoms to the descriptions of the prototypes and descriptions provided in the three categories to determine the most appropriate classification.

Appendix II: Proposed Diagnostic Criteria for the Broad Categories for the Diagnosis of Eating Disorders (BCD-ED)

All individuals classified in the BCD-ED scheme meet the fundamental conceptual definition of an eating disorder, i.e., a persistent disturbance of eating or eating-related behavior that results in the altered consumption or absorption of food and that significantly impairs physical or psychosocial functioning. The disturbance is not secondary to any recognized general medical disorder or any other psychiatric disorder (14).

Dimensional Measures in the BCD-ED Scheme

The following should be assessed in an individual with an eating disorder, and used for the assignment to categories:

1. Body mass index
2. Frequency and size of episodes of out of control eating
3. Frequency and nature of inappropriate compensatory behaviors (e.g., self-induced vomiting, laxative misuse)
4. Concern about body shape and weight
5. Degree of distress and impairment related to eating disorder symptoms

Broad Categories for the Diagnosis of Eating Disorders (BCD-ED)

The BCD-ED scheme is comprised of three broad categories and a residual category (EDNOS). The categories are hierarchical, so that, for example, individuals meeting criteria for nnn.1 would not be considered to have nnn.2, nnn.3, or nnn.4.

nnn.1 Anorexia Nervosa and Behaviorally Similar Disorders (AN-BSD)

nnn.2 Bulimia Nervosa and Behaviorally Similar Disorders (BN-BSD)

nnn.3 Binge Eating Disorder and Behaviorally Similar Disorders (BED-BSD)

nnn.4 Eating Disorder Not Otherwise Specified (EDNOS)

nnn.1 Anorexia Nervosa and Behaviorally Similar Disorders (AN-BSD)

Diagnostic Criteria for AN-BSD

1. Severe restriction of food intake relative to caloric requirements leading to the maintenance of an inappropriately low body weight for the individual taking into account their age and height.
2. Clinically significant distress or functional impairment related to the eating disturbance.
3. Not better accounted for by another Axis I disorder or a general medical condition.

Subgroups

nnn.11, Typical Anorexia Nervosa, with or without amenorrhea

nnn.12, Anorexia Nervosa, without evidence of distortions related to body shape and weight

nnn.13, AN-BSD with significant weight loss at or above a minimally acceptable body weight

nnn.14, AN-BSD-NOS

nnn.2 Bulimia Nervosa and Behaviorally Similar Disorders (BN-BSD)

Diagnostic Criteria for BN-BSD

1. Recurrent out of control eating and the recurrent use of inappropriate purging behaviors after eating to control weight or shape and/or the absorption of food.
2. Clinically significant distress or functional impairment related to these behaviors.
3. Not better accounted for by another Axis I disorder or a general medical condition.
4. Does not meet criteria for nnn.1.

Subgroups

nnn.21, Typical Bulimia Nervosa

nnn.22, Bulimia Nervosa, low frequency

nnn.23, Purging Disorder

nnn.24, BN-BSD-NOS

nnn.3 Binge Eating Disorder and Behaviorally Similar Disorders (BED-BSD)

Diagnostic Criteria for BED-BSD

1. Recurrent episodes of out of control eating, during which the individual feels as if he/she cannot stop or control eating behavior.
2. Clinically significant distress or functional impairment related to these behaviors.
3. Not better accounted for by another Axis I disorder or a general medical condition.
4. Does not meet criteria for nnn.1 or nnn.2.

Subgroups

nnn.31, Typical Binge Eating Disorder

nnn.32, Binge Eating Disorder, low frequency

nnn.33, BED-BSD, binge episodes not objectively large

nnn.34, BN-BSD-NOS

nnn.4 Eating Disorder Not Otherwise Specified (EDNOS)

Residual category for clinically significant eating disorder not meeting criteria for one of the categories above. Possible example: recurrent chewing and spitting of food, night eating syndrome.

Diagnostic Criteria for Subgroups

Each broad category includes several subgroups arranged in a hierarchical relationship, which are described below.

nnn.1 Anorexia Nervosa and Behaviorally Similar Disorders

nnn.11, Typical Anorexia Nervosa

A. Severe restriction of food intake relative to caloric requirements leading to maintenance of body weight below a minimally normal weight for an individual taking into account age and height (e.g., 85% of that expected).

B. Evidence of intense fear of gaining weight or becoming fat, even though underweight.

C. Disturbance in the way in which one's body weight or shape is experienced, undue influence of body shape or weight on self-evaluation, or denial of the seriousness of current low body weight.

Note: amenorrhea is not required.

nnn.12, Anorexia Nervosa, without evidence of distortions related to body shape and weight

A. Severe restriction of food intake relative to caloric requirements leading to maintenance of body weight below a minimally normal weight for an individual taking into account age and height (e.g., 85% of that expected).

B. Evidence of intense fear of gaining weight or becoming fat, even though underweight.

C. Does not meet criteria for nnn.11

Note: amenorrhea is not required.

nnn.13, AN-BSD, with significant weight loss at or above a minimally acceptable weight

A. Severe restriction of food intake relative to caloric requirements in order to avoid weight gain.

B. Evidence of intense fear of gaining weight.

C. Disturbance in the way in which one's body weight or shape is experienced or undue influence of body shape or weight on self-evaluation

D. Body weight at or above minimally normal for an individual taking into account age and height.

E. Does not meet criteria for nnn.11 or nnn.12.

nnn.14, Disorders Behaviorally Similar to Anorexia Nervosa Not Otherwise Classified

A. Severe restriction of food intake relative to caloric requirements leading to maintenance of body weight below a minimally normal weight for an individual taking into account age and height (e.g., 85% of that expected).

B. Does not meet criteria for nnn.11, nnn.12, or nnn.13.

nnn.2 Bulimia Nervosa and Behaviorally Similar Disorders

nnn.21, Typical Bulimia Nervosa

A. Recurrent episodes of binge eating (the consumption of a large amount of food in a discrete period of time accompanied by a sense of loss of control).

B. Recurrent inappropriate compensatory purging behavior after binge eating to prevent weight gain (self-induced vomiting, abuse of laxatives, diuretics, or enemas).

C. The binge eating and inappropriate purging behavior both occur, on average, at least once a week for three months

D. Self evaluation is unduly influenced by body shape and weight

E. Does not meet criteria for nnn.1.

nnn.22, Bulimia Nervosa, low frequency

A. Recurrent episodes of binge eating (large amount of food in a discrete period of time accompanied by a sense of loss of control).

B. Recurrent inappropriate compensatory purging behavior to prevent weight gain (self-induced vomiting, abuse of laxatives, diuretics, or enemas).

C. Self evaluation is unduly influenced by body shape and weight

D. Does not meet criteria for nnn.1 or nnn.21.

nnn.23, Purging Disorder

A. Recurrent inappropriate compensatory purging behavior following out of control eating.

B. Self evaluation is unduly influenced by body shape and weight

C. Does not meet criteria for nnn.21 (or nnn.22, if that is included).

nnn.24, Disorders Behaviorally Similar to Bulimia Nervosa Not Otherwise Classified

A. Recurrent out of control eating

B. Recurrent use of inappropriate behaviors to control weight or shape and/or the absorption of food.

C. Does not meet criteria for nnn.21, nnn.22, or nnn.23.

In the current structure, this might include individuals who experience loss of control over eating and recurrently induce vomiting after eating but deny overconcern with shape and weight. Also, individuals who induce purging but do not describe out of control eating.

nnn.3 Binge Eating Disorder and Behaviorally Similar Disorders (BED-BSD)

nnn.31, Typical Binge Eating Disorder (BED)

A. Recurrent episodes of binge eating (large amount of food in a discrete period of time accompanied by a sense of loss of control).

B. The binge eating occurs, on average, at least once a week for three months.

C. Does not meet criteria for nnn.1 or nnn.2.

nnn.32, Binge Eating Disorder, low frequency

A. Recurrent episodes of binge eating (large amount of food in a discrete period of time accompanied by a sense of loss of control).

B. Does not meet criteria for nnn.1 or nnn.2 or nnn.31.

nnn.33, Subjective Binge Eating

A. Recurrent episodes of out of control eating that do not involve the consumption of objectively large amounts of food.

B. Does not meet criteria for nnn.1 or nnn.2 or nnn.31 or nnn.32

nnn.34. Disorders Behaviorally Similar to Binge Eating Disorder Not Otherwise Classified (BED-BSD-NOS)

A. Recurrent episodes of out of control eating, during which the individual feels as if he/she cannot stop or control eating behavior.

B. Does not meet criteria for nnn.1, nnn.2, or nnn.31–33.

Table 1

Would a Diagnostic System of Three Broad Categories Would Significantly Reduce EDNOS Cases?

Reference	Population	Methods	Results	Conclusions
Williamson et al., 1992 (19).	In and outpatients, (n=75), with DSM-IIIR: AN: 19% BN: 20% EDNOS: 61% EDNOS cases were subthreshold AN or BN, and at a minimum met: (1) 2 of 4 criteria for AN, (2) 3 of 5 criteria for BN, or (3) 4 of combined DSM-IIIR symptoms of BN and AN.	A range of cross-sectional assessments were examined using cluster analysis to examine subtypes of EDNOS.	Three clusters were identified: (1) subthreshold AN, similar to AN but at a higher weight (n=15), (2) BN non-purging, controlled weight with dieting, although dieting less severe than AN or BN (n=19), and (3) BED, little purging, no dieting, higher weight (n=12)	This is the first study using an empirical classification of EDNOS. It supports the potential utility of relaxing the boundaries of AN and BN. The BED- BSD scheme would re-classify most of these EDNOS cases.
Hay, Fairburn, & Doll, 1996 (20).	Sampled 250 women from general practitioner settings who reported, upon questionnaire, that they had binge eating, although objectively large episodes were not required.	Data from the EDE were subjected to a cluster analysis.	Four clusters emerged: (1) high frequency vomiting plus some form of binge eating (n=30); (2) frequent objective binge episodes (n=86); (3) frequent subjective binge episodes (n=30); (4) heterogeneous (n=102). The resulting four cluster solution does not resemble DSM- IV.	BCD-ED would accommodate most individuals with EDNOS, with the majority of women in primary care settings who complain of binge eating classified in the BED-BSD eating category. A much smaller fraction would be in the BN-BSD category.
Hay & Fairburn, 1998 (21).	A total of 250 women, including: BN purging: 27% BN non-purging: 7% BED: 27% EDNOS (subjective binge eating + occasional purging): 25% Below EDNOS threshold: 14%.	Data from the 1996 study (20) were reexamined, with additional data from a 1 year follow-up.	Some support was found for a gradation in severity, with: BN purging > BN non-purging > BED. BN purging and BN non-purging had more temporal stability than BED.	Provides some support for the hierarchy of BCD-ED, whereby BN- BSD is considered more severe than BED-BSD. Some proportion of the EDNOS group would likely be classified as BN-BSD or BED-BSD, thereby reducing the frequency of EDNOS; however, it is not possible to determine the precise number of individuals who would be re-classified into these groups
Mizes & Sloan, 1998 (22).	53 individuals with EDNOS presenting for treatment, as inpatients or outpatients.	Relaxed DSM-IV criteria to evaluate EDNOS subgroups, and used cluster analysis for individuals with EDNOS on data from clinical interview and self report measures.	Among the EDNOS group, identified six groups: BN without objective binge eating: 15%, BN without purging: 23%, BN failing to meet the frequency or duration criteria: 13%, AN except amenorrhea: 13% AN except weight and amenorrhea: 23%, and other: 13%. Identified 2 clusters: (1) heterogeneous EDNOS group	By simply relaxing the existing criteria, all but 13% of individuals with EDNOS could be classified; however, the cluster analysis was less applicable to the BCD-ED proposal. Overall, the study indicates that the BCD-ED

Reference	Population	Methods	Results	Conclusions
			(n=42) and (2) overweight binge-eating group (n=11)	proposal, which relaxes the diagnostic criteria in a manner similar to that described by Mizes & Sloan (1998), would greatly reduce EDNOS.
Bulik et al., 2000 (15).	2163 Caucasian twins from a population-based registry, with 1071 individuals who answered one of 9 ED questions positively included in the analysis.	Answers to the 9 questions were subjected to a latent class analysis.	A 6-class solution was the best fit: (1) shape/weight preoccupied (fear of fatness, body image distortion, wt > 85%, some binge eating); (2) low weight with binge eating (binge eating w/out loss of control, lower weight, some compensatory behavior, no shape/weight concern); (3) low weight without binge eating (at lower weights— 50% < 85% IBW, fear of fatness, no binge eating or compensatory behavior); (4) AN (weights < 85% IBW, fear of fatness, some binge eating); (5) BN (few w/ weights < 85% IBW, most reported binge eating and compensatory behavior and concern with shape & weight); (6) binge eating (binge eating, purging only rarely endorsed, concern about shape/weight=uncommon). Classes 4, 5, and 6 considered to be EDs, had most personality pathology.	The study's implications regarding the BCD-ED scheme are unclear, and evaluation of the latent class analysis is complicated by problems with shared variance of the twin sample. The first three classes may reflect sub-clinical eating disorders or other diagnoses (e.g., depression), totaling 55.4% (n=593/1071). The remaining three classes resemble the three broad categories of BCD-ED, but there were also some important differences. For instance, while all of class 6 (similar to BED) endorsed binge eating, only about half reported being out of control.
Ricca et al., 2001 (5).	189 consecutive individuals presenting to a clinic were interviewed: AN-R: 10.0% AN-BP: 14.8% BN-purging: 20.1% BN-non-purging: 4.8% BED: 8.5% EDNOS: 41.8% Among EDNOS patients: Atypical AN: 31.6% Atypical BN: 68.4%	Compared groups of full and subthreshold patients.	Atypical AN pts either did not meet the weight criterion and/or the amenorrhea criterion. Atypical BN pts did not meet the frequency and/or duration criteria for binge eating and/or inappropriate compensatory behavior. Atypical cases were, on psychometric measures, quite similar to the typical cases. Atypical AN pts had a mean BMI of 17.6 kg/m^2 vs. 15.7 kg/m^2 for the typical group.	Simply broadening the criteria for AN and BN dramatically reduced the frequency of EDNOS diagnoses in this clinic, implying that the application of BCD-ED would produce similar results.
Andersen et al., 2001 (23).	119 admissions with EDNOS including: 47% met criteria for AN except amenorrhea; 28% met AN criteria but were above the 85% of normal weight threshold; 3% met both exceptions; 3% met criteria for BN except for	Compared individuals with EDNOS to individuals meeting DSM-IV criteria for AN or BN on measures of eating disorder and depressive symptoms and current/past weight.	Individuals with AN who failed to meet the amenorrhea criteria scored lower on one measure of eating disorder symptoms than individuals with DSM-IV AN. The individuals with BN who failed to meet the frequency/duration criteria had a higher BMI than full threshold BN (35.6 kg/m^2vs 27.3 kg/m^2).	The BCD-ED scheme would appear to capture all but 22/397 (6%) of individuals described from this study; the AN-BSD category might not include all the individuals from this sample who were not underweight.

Reference	Population	Methods	Results	Conclusions
	the frequency criterion; 19% did not meet expanded criteria for AN or BN.			
Thaw, Williamson, & Martin, 2001 (24)	A combined clinic/community sample of 193 individuals, including: AN-R: 12.4%; BN-purging: 20.7%; EDNOS: 56%; Within the EDNOS group, BED: 30.6%.	Examined the impact of changing the DSM-IV criteria on the rates of AN, BN and EDNOS. For AN, the weight criterion was relaxed and the amenorrhea criterion eliminated; for BN, dropped "large amount" and relaxed the frequency criterion.	If the "severity" criteria for AN and BN were altered, the number of individuals classified with EDNOS dropped substantially, from 108 to 64 (a 41% decrease).	This study provides evidence that the BCD-ED scheme would significantly reduce EDNOS.
Williamson et al., 2002 (25)	341 individuals with eating disorders and controls: BN purging: 11.1%; BN non-purging: 2.1%; AN-R: 5.6%; AN-B/P: 4.7%; EDNOS: 22.9%; BED: 12.6%; Obese individuals: 7.0%; Normal controls: 34.0%.	Analyzed ratings of the DSM-IV symptoms obtained via semi-structured interview. Factor analysis (exploratory & confirmatory) and taxometric analyses were used to examine underlying structures.	Differences were observed among the 6 groups in age and BMI. The factor analysis identified 3 factors: (1) binge eating, (2) fear of fatness/compensatory behaviors, and (3) drive for thinness. The taxometric analyses indicated that ED may be taxons—i.e., qualitatively different from normal.	Implications regarding the BCD-ED proposal from this study are unclear.
Crow et al., 2002 (18)	385 women with full-syndrome vs. partial syndrome AN, BN, and BED. Recruited from inpatient and outpatient treatment, and "media".	Validators were demographic characteristics, and a number of interview and self-report measures. Discriminant analysis was used whereby a weighted score was created which was then used to classify individuals.	Two parameters were identified by the discriminant function analysis: (1) "eating control" and (2) "eating dyscontrol." AN scored high on the first, but lower on the second; BN was high on both; BED was low on the first but high on the second. Generally, partial and full syndrome individuals were very similar, but a few distinctions were noted, especially between BN-partial and DSM-IV BN.	A number of differences were identified between AN, BN, and BED, supporting a distinction between these three DSM-IV disorders. Considerable support was found for similarities between the partial syndromes and those of DSM-IV. The BCD-ED scheme is consistent with these findings.
Turner & Bryant-Waugh, 2004 (6).	200 consecutive referrals to an adult ED clinic, including 190 with a clinical eating disorder (14). Among the 134 individuals with EDNOS: 40.3% met all AN criteria but one: (BMI >17.5: 76%; no amenorrhea: 11.1%; did not meet criterion C: 13.0%) 49.3% met all criteria but one for BN: (did not meet frequency criterion for	EDE items were analyzed using a cluster analysis.	The cluster analysis yielded 4 clusters, which did not map well onto the DSM-IV categories.	Liberalizing the criteria for AN and BN captured 120 of the individuals with EDNOS, leaving only 14/190 (7%) in the EDNOS category. The cluster analysis identified rather different groupings than the proposed BCD-ED categories. Thus, this study provides evidence that the BCD-ED would greatly reduce EDNOS, but does not provide empirical support for the three broad categories.

Reference	Population	Methods	Results	Conclusions
	binge eating: 68.1%; for compensatory behavior: 4.5%; no inappropriate compensatory behavior: 3.0%).			
Keel et al., 2004 (26)	1179 affected probands and relatives in genetics studies.	Used latent class analysis to examine eating disorder symptoms.	Four classes were identified: (1) restricting AN; (2) AN and BN with multiple methods of purging; (3) restricting AN without obsessive-compulsive features; (4) BN with vomiting as the sole form of purging.	The results provide support for a restricting AN class, but the majority of the sample was underweight, so it is difficult to extrapolate. A major question left unaddressed, but noted in the discussion, is whether the AN-R group is distinct from the AN-BP group; i.e., should the latter be grouped with BN. The BCD-ED scheme would include the four classes, but suggests including AN-BP in the AN-BSD category.
Clinton et al., 2005 (16).	Reviewed two previous studies (Sweden/England) Data were systematically collected in two large clinical populations.	Used cluster analyses of key ED symptoms and examined both hierarchical and non-hierarchical systems	The Swedish sample produced a 5 group solution: (1) Generalized eating disorder with normal BMI, food avoidance, vomiting, but low levels of laxative abuse and amenorrhea; (2) AN-like cases with a low BMI and amenorrhea; (3) Overeaters with a high BMI and binge eating; (4) Individuals with binge eating, vomiting, normal BMI; and (5) Laxative abusers with a low BMI and high levels of laxative abuse. The English sample led to similar, but not identical clusters. Other solutions were considered, including a 3 cluster solution: (1) Generalized eating disorder with binge eating, vomiting, laxative abuse, and normal BMI, (2) AN and, (3) binge eating.	The three group solution is quite similar the BCD-ED scheme. The major difference appears to be that the AN-type group had low levels of binge eating and purging. The three-group system described would cover ~95% of individuals with EDNOS, suggesting that the BCD-ED proposal would as well.
Williamson et al, 2005 (17)		A review of 8 factor analytic studies and 4 taxometric studies.	The factor analytic studies appear to identify three factors: (1) general psychopathology/ binge eating; (2) restrictive eating/fear of fatness; and (3) drive for thinness. These studies consider disorders involving binge eating (BN, BED, AN-BP) to be qualitatively different from AN, restricting subtype (AN-R), normal weight controls, and obese controls. However, AN-R	The three category proposal suggested in this paper would be consistent with AN-R, BN, and binge eating, which are quite similar to the BCD-ED proposal. The major difference is that AN-BP would be grouped with BN, instead of the AN-BSD category.

Reference	Population	Methods	Results	Conclusions
			was found to occur on a continuum with both normalcy and obesity.	
Dalle Grave & Calugi, 2007 (9)	186 individuals on an inpatient unit with an eating disorder of clinical severity, including: AN: 41.9%; BN: 17.8%; EDNOS: 40.3%.	Used the EDE to diagnose AN, BN, and EDNOS, and altered rates of AN by: (1) deleting amenorrhea criterion, (2) raising BMI threshold to 18.5 kg/m^2, (3) including individuals without concerns about shape and weight; and for BN by: (1) changing frequency criteria from 2x/week to 1x/week.	With adjustments to both AN and BN, the prevalence rates were 71% AN (n=132), 14% BN (n=26), and 15% EDNOS (n=28), a significant decrease in the EDNOS group.	There were differences between the "traditional" AN group and the broadened AN group in a range of measures of symptom severity. Modifying the 3 AN criteria had a substantial effect on EDNOS; however, as this was an inpatient sample, it may not generalize more broadly. Similar modifications are suggested in the BCD-ED scheme, and, in addition, as many as 78.6% of the residual EDNOS group would be included in the BCD-ED proposal.
Fairburn et al., 2007 (10)	170 individuals in 2 clinics in the United Kingdom (BMIs 16–40), including: AN: 4.7%; BN: 35.3%; EDNOS: 60%.	Assessments included the EDE and several self-report measures. Systematic changes were made to the diagnostic criteria to determine whether alterations would increase the number of individuals who fit into AN or BN.	With the most relaxed criteria [AN—no amenorrhea, BMI < 18.5, overvaluation of control of eating; BN—frequency of binge eating/purging 1x/week and binge eating could be SBEs only] classifications changed to: 12.4% AN (n=21), 51.2% BN (n=87), and 36.5% EDNOS (n=62), of whom 14.5% had BED (n=9 of EDNOS cases)	The proportion of individuals in the EDNOS category decreases significantly with relaxing all of the diagnostic criteria described (~40%), which are also included in the BCD-ED scheme. However, it is unclear how the BCD-ED scheme would handle the characteristics of the remaining 53 (31%) EDNOS cases.
Mitchell et al. 2007 (11)	N=403 EDNOS cases drawn from several clinics from a total sample of 687 individuals evaluated for an eating disorder (59%).	Used latent profile analysis including BMI categories, binge ating, vomiting, laxative use, fear of weight gain, body dissatisfaction and importance of weight and shape. Data were obtained from self-report measures.	Identified 5 classes: (1) Subsyndromal primarily restrictor AN (denied eating disorder psychopathology with a BMI < 17.5, low binge eating and purging): 16%; (2) Low-normal weight individuals with higher rates of eating disorder psychopathology and binge eating: 22%; (3) Subsyndromal BN (normal weight, high levels of fear of weight gain, body dissatisfaction, importance of shape and weight with a substantial amount of vomiting or laxative abuse): 19%; (4) Obesity (overweight individuals, lower ED psychopathology with fear of weight gain, body dissatisfaction, weight and shape importance, little purging): 12%; (5) BED (overweight individuals higher (than class 4)	Four of the five classes fit clearly into the BCD-ED scheme, including: class 1: refusal to maintain normal weight; class 3 inappropriate methods of weight control; classes 2 and 5, BED. However, class 4, obesity, would not. 88% of EDNOS cases would be re-categorized under the BCD-ED scheme. In addition, the analysis appears to provide empirical support for the proposed groups.

Reference	Population	Methods	Results	Conclusions
			levels of fear of weight gain, body dissatisfaction, importance of shape and weight, higher binge eating, lower purging):30%. Both clusters 4 & 5 were older.	
Keel, 2007 (27)	Review of 14 articles with differing definitions of a purging form of EDNOS (PD)		Found mixed results when comparing BN and PD. Studies included in the review failed to show significant differences between the groups on most eating disorder measures, with the exception of TFEQ scores, depression, anxiety, and comorbid mood disorders. Among adolescents, individuals with PD had fewer shape, weight and eating concerns. In comparing older PD vs. BN, PD cases had lower eating concern, dietary restraint, and lifetime suicidality. Cites latent class data suggesting that purging and binge eating/purging patterns were distinct classes, and notes a difference in cholesystokinin release between PD and BN.	On a number of markers of illness, individuals with PD have similar clinical severity to individuals with BN. However, as Keel notes, individuals with PD are generally less concerned with their eating than individuals with BN and may have a different biological profile. Effect sizes for PD vs. controls are generally large. This review provides some tentative support for including PD in the broad category with individuals with BN, as suggested by the BCD-ED scheme, but also indicates there are differences.
Rockert et al., 2007 (8)	N=1449 treatment-seeking individuals at a specialty hospital-based program, including: AN-R: 10.4%; AN-B/P: 13.1%; BN purging: 29.3%; BN non-purging: 7.1%; EDNOS: 40.1%.	Individuals in the AN and BN groups were compared to individuals with EDNOS	Identified 6 groups within EDNOS, including: (1) Restrictors (BMI > 18.5, no objective binge episodes or purging); (2) Subthreshold BN (1–7 binge episodes per month and < 8 episodes of vomiting/ laxatives per month); (3) Purging only: (no binge eating > 1 episode of vomiting/laxatives per month); (4) Subthreshold bingers/threshold purgers (1–7 binge episodes per month and ≥ 8 episodes of vomiting/ laxatives per month); (5) Threshold bingers/ subthreshold purgers (≥ 8 binge episodes per month and 1–7 episodes of vomiting/laxatives per month); (6) Binge eating disorder (≥ 8 binge episodes per month and no compensatory behavior).	Most individuals with EDNOS, those from categories 2–6 (88.9%), would be classified in the BCD-ED scheme. Individuals in the restricting group with a BMI > 18.5 without other eating disorder behaviors might not be classified as AN-BSD.
Eddy et al., 2008 (28)	281 adolescents from an outpatient clinic, including: AN-R: 17.8%; AN-B/P: 2.5%; BN: 19.2%; BN non-purging: 1.4%; EDNOS: 59.1%.	Examined the symptoms of individuals with EDNOS to describe their clinical characteristics	Identified 16.4% individuals considered subthreshold AN (n=46), 11.7% considered subthreshold BN (n=33), 16.4% with purging in the absence of objective binge eating (n=46), 11.4% with purging disorder (n=32), 5.0% with subthreshold purging disorder (n=14), 3.6% with objective binge eating (n=10), 1.4% with BED	The majority of adolescents presenting for treatment were diagnosed with EDNOS (59.0%). Even in this younger sample, it appears that the BCD-ED scheme would likely classify all but a small fraction (11%) of the individuals

Reference	Population	Methods	Results	Conclusions
			(n=8), and 0.7% with subthreshold BED (n=2). The remaining 31 individuals (11.0%) could not be classified.	with EDNOS.
Zimmerman et al., 2008 (29)	N=84 EDNOS outpatients from the Rhode Island Hospital Methods to Improve Diagnostic Assessment and Services (MIDAS), including 73% with a subthreshold eating disorder: Subthreshold AN: 20.2%; Subthreshold BN: 20.2%; Subthreshold BED: 32.1%.	Examined the characteristics of individuals with EDNOS.	In subthreshold AN group: 16 individuals failed to meet the amenorrhea criterion and 1 individual weighed > 85% IBW but did not meet other criteria for AN. In subthreshold BN group: 11 individuals were not binge eating or compensating a minimum of twice weekly for three months (behavior occurred, on average, 3 times per month), 4 individuals did not experience binge eating and compensating twice weekly for a full 3 month period, and 2 denied body image disturbance. In the subthresold BED group: 25 individuals did not experience twice weekly binge eating episodes for a six month period and 2 individuals did not experience distress associated with binge eating.	The proportion of individuals in the EDNOS category would decrease significantly with in the BCD-ED scheme. However, the symptoms of remaining EDNOS cases (27.4%) are unclear, and it is uncertain how they would be categorized in the BCD-ED proposal.
Eddy et al., in press (30)	N=687 treatment-seeking individuals from four specialist treatment centers, including: AN-R: 4.5%; AN-B/P: 5.8%; BN: 27.4%; EDNOS: 62.3%. Within the EDNOS group: BED: 24.5%; EDNOS-BED: 1.4%; EDNOS-BN: 2.8%; Purging disorder: 6.3%; EDNOS-AN-R: 4.7%; EDNOS AN-B/P: 4.9%; Other EDNOS: 55.4%.	Data from the Mitchell et al. (2007) study were reexamined, using additional individuals and validators for the latent profile analysis.	Identified 5 classes: (1) multiple purging: mostly normal weight individuals reporting fear of weight gain and shape/ weight concerns, objective binge eating and purging with vomiting, laxative/diuretic misuse, chewing and spitting (2) BED: overweight/obese with binge eating and without compensatory behavior; (3) BN-vomiting: normal weight, objective binge episodes with vomiting only; (4) low weight-extreme eating disorder cognitions: excessive exercise, avoidance of foods, eating in secret, fear of weight gain, body dissatisfaction, shape/weight concerns; and (5) low weight-minimal eating disorder cognitions: subjective binge eating..	The classes appear broadly similar to the categories described in BCD-ED, with classes 1 and 3 similar to BN-BSD, class 2 similar to BED-BSD, and classes 4 and 5 similar to AN-BSD.

Note. AN=Anorexia Nervosa, AN-R=Anorexia Nervosa restricting subtype, AN-BP=Anorexia Nervosa binge-purge subtype, BCD-ED=Broad Categories for the Diagnosis of Eating Disorders, BED=Binge Eating Disorder, BED-BSD=Binge Eating Disorder and Behaviorally Similar Disorders, BMI=body mass index (kg/m^2), BN=Bulimia Nervosa, BN-BSD=Bulimia Nervosa and Behaviorally Similar Disorders, EDNOS=Eating Disorder Not Otherwise Specified, PD= Purging Disorder, EDE=Eating Disorder Examination (Cooper & Fairburn, 2003), OBE=objective bulimic episode.