Should Non-Fat-Phobic Anorexia Nervosa Be Included in DSM-V?

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ABSTRACT

Objective: Cross-cultural data suggest that rationales for food refusal vary in anorexia nervosa (AN), and a variant, termed non-fat-phobic AN (NFP-AN), has been described. This review evaluates whether data support modification of the requirement for intense fear of weight gain to meet AN criterion B in DSM-V.

Method: We performed a systematic search of the Medline and PsychInfo literature and evaluated the relevant publications by Robins and Guze's (Am J Psychiatry 126, 983–987, 1970) criteria as a standard for diagnostic validity. We also performed a meta-analysis comparing the severity of eating pathology in AN to (a) NFP-AN and (b) AN with low drive for thinness (low-DT-AN).

Results: A modest literature indicates that NFP-AN has wide geographic distribution and occurs in both Western and non-Western populations alongside cases of typical AN. Aggregating across eligible studies, patients with NFP-AN or low-DT-AN score at least 2/3 of a standard deviation lower on measures of eating pathology than patients with conventional AN. Transcultural comparison of drive for thinness suggests significantly lower norms in non-Western cultures.

Discussion: NFP-AN occurs with wide distribution. Further research is necessary on the course and outcomes of NFP-AN to characterize its congruence with, or distinction from, conventional AN. We discuss several options for including a description of NFP-AN in DSM-V. © 2009 American Psychiatric Association.

Keywords: anorexia nervosa; fat phobia; non-fat-phobic AN; low drive for thinness AN

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Introduction

Cultural variation in the presentation of anorexia nervosa (AN) has been reported with respect to the rationale for food refusal. Some of these rationales do not reflect the "intense fear of gaining weight or becoming fat" specified by DSM-IV AN criterion B.[1] As a result, this atypical presentation—commonly referred to as "non-fat-phobic AN" (NFP-AN)—has raised questions about whether this variant is a *forme fruste* of AN versus a more benign variant of eating disorder not otherwise specified (EDNOS). Likewise, the absence of "fat phobia" in cases that otherwise appear very clinically similar to AN raises questions about whether it is intrinsic to the disorder. Finally, because the diverse rationales for food refusal and low weight—exemplified by patients with NFP-AN—appear associated with particular historical and cultural contexts, this presentation lends support to the possibility that conventional AN is "culture-bound."

Given cultural variation in rationales for food refusal, several theorists[2–5] have advocated for flexibility regarding fear of weight gain as a diagnostic criterion. The countervailing view, however, is that fat phobia is the *sine qua non* of AN and should be retained as a diagnostic criterion in future nosologic schemata.[6] The aim of this review is to synthesize and critique available data on NFP-AN to consider whether and how it might be best represented in eating disorders classification. In doing so, we borrow a framework from a seminal paper examining the diagnostic validity of subtypes of schizophrenia.[7] In this article, Robins and Guze

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proposed five criteria for establishing the diagnostic validity of a putative disorder: (1) clinical description; (2) laboratory studies (including psychological testing); (3) delimitation from other disorders; (4) follow-up studies; and (5) familial aggregation. The current review comprises three aims: (A) to determine whether NFP-AN meets established criteria for diagnostic validity using this standard; (B) to conduct a meta-analytic evaluation of its delimitation from DSM-IV AN; and (C) to consider possible options for inclusion in DSM-V.

Method

Systematic Search of the Literature

We performed two systematic searches to identify studies in Medline and PsychINFO published from 1950 to 2008 with relevance to NFP-AN. First, we identified papers with the search terms "anorexia nervosa" or "EDNOS" as well as one or more of the following stem words (and/or their derivatives): "fat phobia," "weight phobia," "laparophobia," "fear of fatness," "food refusal," "asceticism," and "empty stomach." This search phase identified fewer than 50 relevant papers, many of which discussed data from the same clinic or were reviews. We identified additional articles from the reference sections of articles identified by our search or through personal communication. In a second search, we identified literature describing the clinical and prognostic significance of drive for thinness in both clinical and nonclinical samples through titles or abstracts containing both the term "anorexia" (and its derivatives) and at least one of the following phrases: "drive for thinness," "thin body ideal," "slim body ideal," "excessive weight loss," "excessive weight reduction," and "desire" (spaced within three words of "thin" or "slim").

Meta-Analysis

To evaluate whether NFP-AN meets Robins and Guze's third criterion, delimitation from other disorders, we applied meta-analytic techniques to studies presenting quantitative data on the differences in eating pathology between AN versus (1) NFP-AN and (2) AN with low drive for thinness (low-DT-AN). We adapted and expanded upon the methodology from a recent meta-analysis quantifying the differences between EDNOS versus AN, BN, or BED.[8a] Study eligibility for inclusion in the current meta-analysis required: (1) comparison of a group meeting full DSM-III-R or DSM-IV criteria for AN with a group meeting all criteria for AN except that fat phobia was absent or they had low drive for thinness; (2) publication in English in 1987 or later (i.e., after publication of DSM-III-R); and (3) sufficient information for the calculation of effect sizes (descriptive data or test statistics).

From each study, we extracted data on all possible measures of current eating disorder psychopathology (both attitudinal and behavioral) in the AN, NFP-AN, and low DT-AN groups. When studies presented multiple measures of eating pathology for the same sample of participants, we averaged those effect sizes to obtain a single effect for that study, and then combined effect sizes across studies utilizing a random effects model to obtain the standardized mean difference (Cohen's *d*). Because the majority of measures of eating disorder psychopathology contain at least some items that assess fear of weight gain and overvaluation of shape and weight, and because these measures have therefore been critiqued as potentially lacking cross-cultural validity, we addressed this potential source of confounding in two ways. First, we evaluated the extent to which including these measures altered our results by calculating two separate effect sizes for each study. The "conservative" effect size included only those measures with no potential for conceptual overlap with fat phobia, such as dietary restraint, bingeing, purging, and non-overlapping subscales of multi-dimensional measures of eating pathology. In contrast, the "broad" effect size combined data on all possible measures of eating pathology, including all subscales of the Eating Disorder Examination (EDE),[9] Eating Disorder Inventory (EDI),[10] and Eating Attitudes Test (EAT).[11] Second, to examine the magnitude and direction of effects within each cross-cultural context, we calculated summary effect sizes separately for studies on Western versus non-Western populations. In addition to probing between-group differences in eating pathology, we also meta-analytically evaluated between-group differences in body mass index (BMI), another marker of AN severity.

Results

Clinical Description

Robins and Guze's first criterion for diagnostic validity is a description of the "clinical picture" of the putative disorder, including both distinctive symptoms and associated demographic characteristics. Numerous case studies and case series from a variety of cultural contexts present detailed accounts of volitional self-starvation in the absence of fat phobia; this volume of literature appears to

[a]We utilize some of the same studies as Thomas et al. (2009), but expand on their methodology in three ways: (1) we applied fewer exclusion criteria on potentially eligible studies (i.e., we did not require diagnoses to be obtained via structured interviews; we increased the search timeline from 1987 to 2008) so as to obtain as large a study set as possible; (2) we present two different measures of effect size (i.e., conservative versus broad) for each study; and (3) we evaluate potential between-group differences in BMI.

meet this first criterion. Although historical data also suggest the contextual nature of food refusal,[12,13] we focus on contemporary data in this review.

Cultural Variation in Rationales for Food Refusal. Contemporary research provides a modest number of case reports and case series documenting NFP-AN (**Table 1**). Most reports describe NFP-AN in Hong Kong Chinese identified in clinical settings.[5,16,20,23–26,38] Notably, the majority are authored or co-authored by Professor Sing Lee, a psychiatrist and medical anthropologist credited with characterizing this phenomenologic variant. However, NFP-AN has also been reported in other non-Western populations, including in Singapore,[14,21] West Malaysia,[19] Ghana,[27] and India[39] as well as in Asian patients residing in Australia[4] and in South Asian patients residing in the United Kingdom.[22,36] Moreover, two studies reporting the relative frequency of NFP-AN in South Asian versus 'White' AN patients in the United Kingdom found that NFP-AN was relatively more common in South Asians[36]; however, one of these studies reported that "sensitivity to 'fatness'" was "invariably revealed" during treatment.[31]

Although Lee et al.'s early work in Hong Kong emphasizes that NFP-AN is common,[5,40] he also recognized that fat phobia and body dissatisfaction were increasing among Chinese adolescent girls in the mid-1990s.[41] Moreover, several small studies present data indicating that conventional AN is identified equally, if not more, commonly as NFP-AN, even in non-Western cultures.[14,19,21,22,25,38] In contrast, a community sample of 688 students in Ghana found no fat phobia expressed among 10 cases identified with underweight attributed to self-starvation,[27] and two India-based investigators assert that fat phobia is "hardly ever seen" in India.[39] Thus, case series and prevalence studies do not support a categorical absence of conventional AN across non-Western cultures. Moreover, our search parameters may have contributed to bias in the relative frequency of NFP-AN as it would not necessarily have identified studies finding no evidence of NFP-AN.

These NFP-AN case reports describe a finite number of alternate rationales for food refusal. Commonly, these are complaints of gastrointestinal symptoms, a somatic idiom of distress more acceptable given local cultural values and expectations.[38] It has also been asserted that the presentation of AN is socially constructed in clinical encounters.[20] The motivation for and manifestation of behavioral symptoms reference not only cultural symbols but also deeply personal meanings.[3,42] Indeed, heterogeneous attribution of weight concerns has been identified in case reports of two American women with AN who drew from personally meaningful symbolism to rationalize dietary restriction with religious—not secular—values.[17,18]

In summary, descriptive data establish the wide geographical distribution of NFP-AN, but the small number of papers recently published does not meet Blashfield et al.'s suggested standard of at least 50 in the past 10 years.[43] Moreover, descriptive data neither specify clearly whether the absence of fat phobia is regarded as a categorical or dimensional[44] construct nor how to classify cases that cross over. Finally, the characterization of NFP-AN is most often based on clinical data from non-Western populations.

Psychological Testing

Robins and Guze's second criterion for the evaluation of diagnostic validity is the refinement of the clinical picture with laboratory tests (in this case, psychological measures).[7] Several NFP-AN papers have presented scores on well-validated measures of eating pathology, including the EAT, EDI, and EDE. Although NFP-AN has typically been assessed with qualitative clinical interviews in non-Western settings, several studies of Western clinical populations have identified cases of low-weight EDNOS or atypical AN exhibiting low levels of fat phobia on standardized assessment measures.[15,45–48] Moreover, the majority of a small number of studies reporting on comparative measures of DT and related constructs across culturally distinct populations have supported culturally based differences in DT. With the exception of a study comparing schoolgirls in Singapore with previously published American data[30] and an assessment across strata defined by religious identification,[49] both of which reported negative findings, these studies have all reported significant between-group differences. Of these, significantly lower DT or weight concern was reported for eating disorder patients in presumably less culturally Western populations compared with reference populations (e.g., AN-R Hong Kong patients compared with AN-R Canadian patients,[33] Japanese compared with North Americans,[35] East Berliners compared with West Berliners,[28,29] and Asian-Americans compared with non-Asian-Americans).[37] Finally, one study demonstrated higher levels of DT in Black, compared with White, preadolescents in the United States.[32] Another study found significantly greater fear of fatness in (South Asian) Indian compared with Australian university students.[34] Despite the consistency of cross-cultural DT differences, individuals with eating disor-

TABLE 1. Clinical observational data and quantitative comparative data supporting cultural diversity in rationale for food refusal in AN and drive for thinness

References	Geographical Region(s)	Sample	*N*	Assessment of AN, Fat Phobia, Drive for Thinness	Results	Investigator Conclusions
Descriptive clinical data supporting cultural variation in rationales for food refusal in AN						
Ong et al.[14]	Singapore	Clinic-based patients with AN	7	Retrospective clinical data	Two of 7 patients had no fat phobia	AN cases identified that mostly resembled—but were "less severe"—than AN described in Western populations
Norvell and Cooley[15]	USA	Clinic-based patients referred for "significant" EDs	2	Clinical interview EDI	Both cases had 25% weight loss and psychological basis for poor intake but no discernible fear of weight gain	Cases should be considered "atypical" EDs in absence of weight concerns
Lee et al.[16]	Hong Kong	Clinic-based Chinese patients with AN	3	Clinical data	All three had (varying) relative denial of fat phobia; abdominal discomfort used as rationale for restriction	Contrasting social norms in China may reduce pursuit of thinness in AN
Banks[17] Overlaps with case report in Banks[18]	USA	Cases of AN identified through religious groups and a treatment center	2	Patient self-report of AN	Religious idioms provided rationale for food refusal and concerns about weight	Religious rationale can motivate AN behaviors in contemporary USA
Goh et al.[19]	West Malaysia	Clinic-based patients who met 2–3 diagnostic criteria for AN	15	Retrospective chart review	Nine of 15 had chart evidence of body image disturbance	Cases of AN occur in this setting that have body image disturbance resembling AN cases in Western populations
Lee[5]	Hong Kong	Clinic-based patients who only partially fulfilled DSM-III-R criteria for AN due to "inconspicuity" of fat phobia and distorted body image (DBI)	16	Semistructured clinical interview BMI DBI assessed by clinical interview, discrepancy in ideal and desired body weights, patients' drawings	• 15/16 complained of abdominal discomfort (usually epigastric) but ""intense fear of obesity"" was "inconspicuous" • Fear of obesity was obvious only in 3, mild in 8, and absent in 5 • 13/16 required inpatient treatment; "resistance toward weight gain" was "almost always present," but was rationalized by 'no appetite,' or "bloating", for example • Fear of obesity did not emerge in treatment (1–5 years duration)	Intense fear of fatness and DBI may be culture-bound concepts and inappropriate for identifying AN among Chinese unassimilated to Western pressures to be thin
Lee[20]	Hong Kong	Clinic-based, emaciated patients	2	Clinical data EDE	Two cases of emaciation/food refusal with rationales that did not include fat phobia	Raises questions about inflexibility of DSM criteria, reification of symptoms, and lack of attunement to patient experience
Ung et al.[21]	Singapore	Clinic-based patients with AN and BN	50	Retrospective chart review; Information from attending psychiatrist "when available"	• 90% "fear of fatness" • 84% "body image disturbance" • 96% "compulsive efforts to lose weight"	Weight and body concerns and fat phobia were expressed in the majority of AN and BN patients in this clinical sample
Ratan et al.[22]	UK (South Asians)	Clinic-based patients with EDs	21	Case record data on DSM-III/III-R diagnoses and ICD-10 research criteria	• Three of 21 met AN criteria • Three of 21 met AN criteria but without fat phobia • Two of 12 cases of BN lacked 'dread of fatness'	Absence of fat phobia observed
Kam and Lee[23]	Hong Kong/ Canada	Clinic-based patients with AN	2	Clinical data EDI	One patient never manifested fat phobia and had low DT; the other had fat phobia and high DT	AN can present without fat phobia; this may account for treatment delays in Hong Kong

TABLE 1. (Continued)

References	Geographical Region(s)	Sample	*N*	Assessment of AN, Fat Phobia, Drive for Thinness	Results	Investigator Conclusions
Ngai et al.[24]	Hong Kong	Clinic-based patients with AN	4	Longitudinal clinical data	Description of four distinct courses for fat phobia: Present; present and then remitting; absent and then present; and absent	Fat phobia is not a core symptom of AN, nor is it temporally stable
Lai[25]	Hong Kong	Clinic-based patients with AN	16	Chart review, including a semistructured clinical interview	• 14/16 had fear of fatness, • 13/16 had weight reduction as rationale for food refusal	Majority of these Hong Kong Chinese AN patients had fat phobia
Regier[4]	Australia	Clinic-based patients with AN or BN and Asian heritage	14	Chart review	All had "egosyntonic" emaciation; not all patients had fat phobia [no specific number reported]	Assumptions that weight concerns are central to EDs should be examined
Chan and Ma[26]	Hong Kong	Clinic-based patient with AN	1	Data extraction from eight family therapy session videotapes	Rationale for food refusal assessed as self-discipline and "punishment" for her family	Rationale for food refusal in AN may be specific to cultural context
Bennett et al.[27]	Ghana	School-based	688	Clinical interview based on ICD-10 diagnostic criteria following a screen for BMI $\leq$19 EAT-30 BITE	• 10 cases identified (1.5%) with underweight attributed to self-starvation • Rationale related to religious motives and self-efficacy; no fat phobia/weight management motives identified • EAT and BITE scores did not identify these 10 cases	AN presents without fat phobia in Ghana
Studies presenting quantitative cross-cultural comparative data relating to fat phobia and drive for thinness						
Steinhausen et al.[28] (overlaps with Neumarker et al.[29])	East Berlin/West Berlin	Clinic-based School-based	East Berlin AN patients (n = 37), West Berlin AN patients (n = 44), and East Berlin students (n = 362)	EDI	• AN respondents in East Berlin scored significantly lower on DT (and 5/8 EDI subscales) compared with AN respondents from West Berlin • DT subscale did not discriminate East Berlin AN and East Berlin non-AN groups	The EDI may lack transcultural validity
Neumarker et al.[29] (overlaps with Steinhausen et al.[28])	East Berlin/West Berlin	Clinic-based School-based	East Berlin AN patients (n = 37), West Berlin AN patients (n = 52), East Berlin students (n = 364), West Berlin students (n = 165)	EAT	• EAT scores were significantly higher in West vs. East Berlin AN patients	EAT scores are culturally dependent
Kok and Tian[30]	Singapore	School-based	656 (Chinese Singapore schoolgirls)	EDI	• No significant DT differences versus American undergraduates • Significantly more respondents with high BMI in high than in low DT groups	Chinese Singapore schoolgirls endorse DT despite low prevalence of AN in this population

TABLE 1. (Continued)

References	Geographical Region(s)	Sample	*N*	Assessment of AN, Fat Phobia, Drive for Thinness	Results	Investigator Conclusions
Soomro et al.[31]	UK	Clinic-based patients with AN and partial syndrome AN	"Non-white" ($n = 41$), "white" ($n = 944$) "non-white" classification included: Asians, Afro-Caribbeans, 'mixed race,' and 'others'	Clinical data/chart review	• 12% "non-white" vs. 5% "white" patients denied "sensitivity to 'fatness'" on admission • "Non-white" patients were four times less likely to admit to "sensitivity to 'fatness'" at presentation in age-adjusted regression model • "Sensitivity to 'fatness'" was "invariably revealed" during weight restoration	Symptom profiles of AN/partial syndrome AN are similar in UK "whites" and "non-whites"
Striegel-Moore et al.[32]	USA	Community-based comparison of black and white preadolescent girls	Black ($n = 311$), White ($n = 302$)	DT	• Black girls had significantly higher DT than White girls • DT was significantly associated with adiposity in both groups and with weight criticism in the Black group	Social pressure is related to DT in Black girls
Lee et al.[33]	Hong Kong	Clinic-based patients with AN-R compared with published Canadian patients with AN-R ($n = 129$)	23	Clinical assessment EDI	• Chinese patients with AN-R had a significantly lower DT than Canadian patients with AN-R	NFP-AN and AN are phenomenologically distinctive
Sjostedt[34]	Australia/India	University-based	Australian students ($n = 297$), Indian students ($n = 249$)	EAT-26 Goldfarb Fear of Fat Scale (GFFS)	• Indians scored significantly higher than Australians on both measures	ED symptoms may be present among educated, elite Indians
Pike and Mizushima[35]	Japan/North American control group	Japanese: Clinic-based AN-R patients ($n = 22$) AN-BP ($n = 24$) BN ($n = 43$) Community sample without ED ($n = 54$) North American comparison sample: Clinic-based AN-R patients ($n = 129$) AN-BP ($n = 103$) BN ($n = 657$) Community sample without ED ($n = 205$)	Japanese with AN ($n = 46$) North American with AN ($n = 232$)	For Japanese participants: Semistructured clinical interview based on DSM criteria; For all: EDI	• Japanese respondents: AN-R, AN-BP, and BN had significantly greater DT than non-ED comparison group • Cross-national comparison: Japanese AN-R, BN, and non-ED groups all had significantly lower DT than respective North American comparison groups	DT appears to distinguish ED from non-ED individuals in Japan, but DT is lower in Japanese than in North Americans across most categories
Tareen et al.[36]	UK	Clinic-based: BMI <18 and history of "self-induced" weight loss without physical cause	South Asian ($n = 14$), "White English" ($n = 14$)	Clinical data	South Asians were significantly less likely to present with fat phobia or to express weight/food preoccupation; significantly more likely to present with loss of appetite than Whites	Symptom profiles for AN may differ for UK South Asians; this may result in their not receiving services
Lee and Lock[37]	USA	Clinic based: Adolescents in family treatment for AN	Asian-Americans ($n = 16$), Non-Asians ($n = 76$)	EDE	Asian-Americans scored significantly lower than non-Asians on EDE restraint and weight concerns subscales notwithstanding similar clinical presentation across groups	Asian-Americans may underreport ED symptoms

Notes: AN, anorexia nervosa; EDI, Eating Disorder Inventory; EDE, Eating Disorder Examination; BN, bulimia nervosa; DT, EDI drive for thinness subscale; BMI, body mass index; BITE, Bulimic Investigatory Test, Edinburgh; EAT, Eating Attitudes Test; NFP-AN, non-fat-phobic AN; AN-R, anorexia nervosa-restricting type; ED, eating disorder.

ders typically exhibit significantly greater DT than non-eating-disordered controls within culturally homogeneous groups, such as Hong Kong[33] and Japan.[35] Thus, although sociocultural context may moderate mean DT levels, similar case–control DT distinctions are found in both Western and non-Western cultural settings.

Delimitation from Other Disorders

Robins and Guze's third criterion for diagnostic validity, delimitation from other disorders, requires that the disorder in question must be clearly differentiable from similar disorders.[7] In contrast to the numerous case series and theoretical reviews describing the differential phenomenology of NFP versus typical AN, only a handful of empirical studies have quantified the magnitude and significance of these differences utilizing well-validated measures.

NFP-AN versus DSM-IV AN. The first generation of quantitative studies compared NFP-AN to DSM-IV AN patients in non-Western societies, including China and Japan. Patients were grouped into fat-phobic versus non-fat-phobic presentations via qualitative clinical interviews. Overall, NFP-AN patients scored significantly lower on attitudinal measures of eating pathology than fat-phobic patients in two quantitative studies,[50,51] but not in two others.[33,52] In one study, significantly fewer NFP-AN patients endorsed bingeing and purging than fat-phobic AN patients[40]; a second study also documented lower rates, but the effect was not significant.[38] Studies with larger samples were more likely to identify significant differences. Aggregating across studies on all available measures of eating pathology, individuals with typical AN scored two thirds of a standard deviation higher than individuals with NFP-AN, d (broad) = 0.65, standard error = 0.21, p = .002. Despite critiques of the cross-cultural validity of self-report questionnaires such as the EDI,[33] EDE,[52] and EAT[50] in non-Western populations, a significant between-group difference remained even when analyses were restricted to measures without potential overlap with fat phobia, d (conservative) = 0.41, standard error = 0.20, p = .04. In contrast, although the two groups did not differ on BMI at presentation (d = 0.27, standard error = 0.21, p = .20), individuals with conventional AN exhibited significantly higher premorbid BMI than those with NFP-AN (d = 0.89, standard error = 0.26, p = .001) (**Table 2**).

Although early studies comparing AN and NFP-AN in non-Western populations were innovative in providing preliminary data on relative severity, findings were limited by their unclear diagnostic reliability (i.e., no inter-rater reliability kappas for AN versus NFP-AN diagnoses were presented in the original research reports) and low statistical power to detect between-group differences. In addition, study findings were of uncertain generalizability because the majority came from a single Hong Kong research group, and diagnoses of fat-phobic versus NFP-AN were based on clinical judgment, which may not be replicable outside this setting.

Low-DT-AN versus High-DT-AN. The second generation of quantitative comparisons featured studies of AN patients in Western populations (Europe and Canada) classified as exhibiting high versus low levels of fat phobia based on a cut point derived from a dimensional measure. Three of these[47,48,53] reported comparisons between low-weight, amenorrheic patients who scored $\leq$7 versus >7 on the EDI DT subscale, whereas another[54] presented comparisons between those scoring <4 versus $\geq$4 on EDE items querying "fear of weight gain," "importance of weight," and "importance of shape." Phenomenologically, Western AN patients endorsing low DT report similar rationales for food refusal to those observed in non-Western samples, such as bloating, nausea, and postprandial discomfort.[48,54] Comparative findings indicate that low-DT-AN patients exhibit significantly lower levels of attitudinal eating pathology on the EDI[47,48,53] and EDE[54] than typical AN patients, and provide some evidence for a more benign behavioral profile among low DT patients, featuring lower rates of bingeing[54] and purging.[48,53] On the basis of these data, study investigators concluded that low-DT-AN exhibits lower levels of eating pathology than high-DT-AN. To examine the possibility that both NFP-AN and low-DT-AN carry similar diagnostic significance, we compared low-DT-AN with conventional AN across studies. Combining effects across studies, the standardized mean difference in eating pathology between AN versus low-DT-AN in Western samples was similar to that observed in non-Western samples. Utilizing all measures of eating pathology, patients with low-DT-AN scored three quarters of a standard deviation lower than did patients with AN, d (broad) = 0.74, standard error = 0.19, $p < .001$. Restricting analyses to measures with no potential conceptual overlap with fat phobia attenuated the effect only slightly; d (conservative) = 0.56, standard error = 0.11, $p < .001$. In contrast, the two groups did not differ on BMI at presentation, d = 0.14, standard error = 0.10, p = .17, and there were insufficient data in the original studies to meta-analytically evaluate group differences in premorbid BMI.

TABLE 2. Studies featuring quantitative comparisons of typical anorexia nervosa versus atypical anorexia nervosa (non-fat-phobic or low drive for thinness presentations)

References	Country	Sample	*N*	Diagnostic Method	Quantitative Measures of Eating Pathology	Cohen's *d* (SE)	Investigator Conclusions
Cross-sectional studies of fat-phobic versus non-fat-phobic AN							
Lee et al.[40]	Hong Kong	AN patients	70	Qualitative interview	**Binge eating**	**0.87 (0.34)***	AN-like syndromes can occur in the absence of fat phobia
					Exercising		
					Vomiting		
					Ideal BMI	*0.74 (0.32)**	
					Current BMI	0.26 (0.27)	
					Premorbid BMI	1.39 (0.31)**	
Lee et al.[33]	Hong Kong	AN patients	23	Qualitative interview	**EDI bulimia**	**−0.29 (0.42)**	The EDI has questionable validity for ED screening in China
					EDI ineffectiveness		
					EDI interoceptive awareness		
					EDI interpersonal distrust		
					EDI maturity fears		
					EDI perfectionism		
					EDI drive for thinness	*0.11 (0.43)*	
					EDI body dissatisfaction		
					Desired BMI		
					Current BMI	0.35 (0.42)	
Lee et al.[38]	Hong Kong	AN patients	48	Qualitative interview	**Bulimia**	**0.64 (0.47)**	Multiple rationales for food refusal are possible in a cross-cultural context
						0.64 (0.47)	
					Current BMI	−0.17 (0.31)	
					Premorbid BMI	0.86 (0.32)*	
Lee et al.[50]	Hong Kong	AN patients	109	Qualitative interview	**EAT bulimia**	**0.52 (0.20)***	The EAT has questionable validity for ED screening in China
					EAT social pressure to eat		
					EAT dieting	*0.72 (0.20)**	
					Desired BMI		
					Current BMI	0.79 (0.20)**	
					Premorbid BMI	0.54 (0.20)*	
Lau et al.[52]	Hong Kong	AN patients	18	Structured interview	**EDE restraint**	**−0.07 (0.47)**	AN and AT scored similarly on the EDE; the fat phobia criterion has questionable validity
					EDE eating concern		
					Objective binge episodes		
					EDE weight concern	*0.07 (0.47)*	
					EDE shape concern		
					Current BMI	−0.21 (0.47)	
Noma et al.[51]	Japan	AN patients	31	Qualitative interview	*EAT-26 ≥ 15*	**Not included**	The EAT-26 has questionable validity for identifying EDNOS in Japan
						*2.37 (0.72)**	
Cross-sectional studies of AN with high versus low drive for thinness							
Ramacciotti et al.[48]	Canada[a]	AN patients	104	EDI-DT ≤7 versus >7	**EDI bulimia**	**0.73 (0.39)**	The AT group exhibited less severe psychopathology
					EDI ineffectiveness		
					EDI interoceptive awareness		
					EDI interpersonal distrust		
					EDI maturity fears		
					EDI perfectionism		
					Laxative abuse		
					EDI body dissatisfaction	*0.80 (0.38)**	

TABLE 2. (Continued)

References	Country	Sample	*N*	Diagnostic Method	Quantitative Measures of Eating Pathology	Cohen's *d* (SE)	Investigator Conclusions
Vervaet et al.[53]	Belgium	AN patients	226	EDI-DT ≤7 versus >7	**DEBQ emotional eating** **DEBQ external eating** **DEBQ restrained eating** **Purging** Current BMI	**0.39 (0.16)*** *0.39 (0.16)** 0.07 (0.15)	The AT group exhibited less severe psychopathology
Abbate-Daga et al.[47]	Italy	AN patients	151	EDI-DT <7 versus >7	**EDI-2 asceticism** **EDI-2 bulimia** **EDI-2 impulse regulation** **EDI-2 ineffectiveness** **EDI-2 interoceptive awareness** **EDI-2 interpersonal distrust** **EDI-2 maturity fears** **EDI-2 perfectionism** *EDI-2 body dissatisfaction* Current BMI	**0.75 (0.17)**** *0.78 (0.17)*** 0.27 (0.17)	The AT group exhibited less severe psychopathology
Dalle Grave et al.[54]	Italy	AN patients	88	EDE fear of weight gain and importance of shape/weight <4 versus ≥4	**Objective bulimic episodes** **Subjective bulimic episodes** **Self-induced vomiting** **Laxative abuse** *Global EDE-Q* Current BMI	**0.48 (0.39)** *1.44 (0.41)*** 0.06 (0.27)	The AT group exhibited less severe psychopathology
Longitudinal studies of typical AN versus non-fat-phobic or low drive for thinness AN							
Strober et al.[45]	USA	AN patients 10–15 years post-treatment	97	Qualitative interview (inter-rater $\kappa = 0.91$)	Achievement of full recovery Prospective onset of bingeing	– 	AT group recovered more rapidly and was less likely to develop binge eating
Lee et al.[55]	Hong Kong	AN patients an average of 9 years after ED onset	88	Qualitative interview	Morgan-Russell outcome Prospective onset of BN	– 	AT group was more likely to achieve good outcome and less likely to develop BN
Dalle Grave et al.[54]	Italy	AN patients post-treatment	88	EDE fear weight gain and importance of shape/weight <4 versus ≥4	Post-treatment BMI, eating pathology, and general psychopathology	–	Response to inpatient CBT was similar for AN and AT groups
Crow et al.[56]	USA	ED patients 13–32 years after initial evaluation	317[b]	Latent class analysis	Mortality (National Death Index)	–	Cluster most resembling AT had mortality rate five times higher than cluster most resembling AN

In the Cohen's *d* column, bold font corresponds to eating pathology (conservative), italic font corresponds to eating pathology (broad), and regular font corresponds to either current or premorbid BMI.

The "conservative" effect size includes only those measures with no potential for overlap with fat phobia (i.e. only those measures written in bold), whereas the "broad" effect size includes all possible measures of eating pathology available in the original research report (i.e. all measures in bold and italics).

Notes: SE, standard error; AN, anorexia nervosa; AT, atypical anorexia nervosa; BMI, body mass index; EDI, Eating Disorders Inventory; EAT, Eating Attitudes Test; DT, EDI: drive for thinness subscale; EDE, Eating Disorders Examination; DEBQ, Dutch Eating Behavior Questionnaire; CBT, cognitive behavioral therapy; BN, bulimia nervosa; ED, eating disorder.

[a] Only the Canadian subsample was included in the meta-analysis, because some participants in the Italian subsample had BN and eating disorder not otherwise specified.

[b] Patients were assigned to categories using latent class analysis. One cluster resembled AN, and the other resembled AT, although not all participants in each latent class met full diagnostic criteria for each.

* $p < .05$.

** $p < .001$.

Key advantages of available Western studies of low-DT-AN include independent replications across multiple research groups, larger samples with sufficient statistical power to detect significant effects, and utilization of quantitative assessment to operationalize "fat phobia." However, classification of "fat-phobic" versus "non-fat-phobic" for these studies utilized somewhat arbitrary cut points in continuous measures of attitudinal pathology that appear unsatisfactory. For example, patients endorsing "a definite fear of weight gain" on up to half the days in the past month could still score <4 on that EDE item[9] and thus be classified as lacking fat phobia. Similarly, patients reporting "sometimes" feeling "terrified of gaining weight" or being "preoccupied with a desire to be thinner" would earn an average score <7 on the DT subscale[10] and thus be classified as "low DT." Thus, patients who demonstrate low scores on measures of weight concern may not necessarily be qualitatively distinct from high DT patients if they experience fat phobia of moderate intensity and periodicity. It is therefore highly uncertain that low DT-AN described in Western populations is comparable to NFP-AN described in non-Western samples. Although NFP-AN is most often represented as a categorical absence of fat phobia, it has also been characterized dimensionally and as temporally unstable (**Table 1**).[5,38]

In summary, limited available quantitative data suggest that both NFP-AN and low-DT-AN are characterized by lesser eating pathology, but similar nutritional compromise (as measured by BMI), compared with AN. Effect sizes for eating pathology remain statistically significant and moderately sized even when analyses are restricted to measures without conceptual overlap with fat phobia. Moreover, analogous differences were manifest in Western samples, suggesting that lesser severity transcends cultural context.

Follow-Up Studies

Robins and Guze's fourth diagnostic validity criterion is the predictive validity of the putative category in follow-up studies.[7] Very few longitudinal studies have examined the course of fat-phobic versus NFP-AN, and available evidence is inconclusive. For example, both groups exhibited significant improvements in body weight and eating pathology in response to a 20-week inpatient/day hospital cognitive-behavioral treatment.[54] However, both the lesser pretreatment severity of NFP-AN and the lack of control group in this study raise the question of whether NFP-AN might have responded equally well to a less intensive intervention. Indeed, two long-term AN outcome studies found that lack of fat phobia at initial clinical presentation was predictive of increased likelihood of remission and reduced probability of developing bulimic symptoms 9 years after eating disorder onset[55] and 10–15 years after clinical presentation.[45] However, a recent study utilizing empirically derived latent classes to predict eating disorder outcome found that the latent class most resembling NFP-AN exhibited a standardized mortality rate five times higher than the class most resembling typical AN in a 13–32 year follow-up of eating disorder patients tracking outcomes through the National Death Index.[56] Finally, the rationale for dietary restriction may lack temporal stability. Lee et al.'s retrospective study of 48 patients with AN demonstrated migration between fat-phobic and non-fat-phobic attributions in both directions.[38]

Family Studies

Robins and Guze's final criterion for diagnostic validity is familial coaggregation of the syndrome.[7] Our literature review did not identify any studies examining the prevalence of NFP-AN in the first- or second-degree relatives of individuals with NFP-AN, nor establishing NFP-AN concordance in monozygotic versus dizygotic twins. However, a small number of twin studies have evaluated the relative contribution of genetic versus environmental influences to related constructs in nonclinical samples. Although some twin studies have identified additive genetic effects for drive for thinness,[57] feelings of fatness,[58] and undue influence of weight and shape in self-evaluation,[59] others have found shared or nonshared environmental influences to be more salient.[60,61]

Discussion

In summary, available data on NFP-AN do not reach our standard for diagnostic validity. Clinical descriptions of NFP-AN arise in both Western and non-Western populations, psychological testing shows a consistent profile on measures of eating disorder psychopathology, and our meta-analytic findings suggest that NFP-AN can be differentiated from conventional AN by milder levels of eating pathology. However, follow-up studies have yielded inconsistent results, and studies of familial aggregation have been limited to analogous constructs studied in nonclinical samples.

First, with regard to clinical description, the specific literature on NFP-AN is modest with relatively few papers published in the past 10 years—in fact, far fewer than the 50 papers Blashfield et al. suggest as a standard for adequate literature to establish a diagnosis.[43] Lee et al.'s studies dominate the literature on NFP-AN, notwithstanding their call for further investigation of this variant.[62]

Second, available data support that NFP-AN is heterogeneous with diverse rationales for food refusal. Somatic complaints (abdominal discomfort, stomach bloating, lack of appetite, or lack of hunger),[38] religious motives, desire for control, and desire for familial impact are commonly endorsed. Absence of fat phobia has also been ascribed to fat phobia's lack of cultural salience as an idiom of distress, poor insight, and intentional nondisclosure of symptoms. Our meta-analytic findings of higher pre-BMI in conventional AN than NFP-AN, coupled with the positive association between drive for thinness and BMI in previous work[30,32] suggest that the etiology of fat phobia may also be influenced by the local nutritional environment. The association between AN and a "culture of modernity," characterized by the high availability of food, has been asserted as an explanation for historical shifts in rationale for self-starvation.[13,63]

Third, with regard to delimitation from other disorders, studies supporting culturally diverse rationales for self-starvation imply a conceptual congruence between NFP-AN and conventional AN. Moreover, crossover between rationale for food refusal indexing fat phobia or not,[38] clinical observational data that endorsement of fat phobia can emerge with treatment,[31] and our own meta-analytic results highlighting comparable nutritional compromise (i.e., BMI) in AN versus NFP-AN and low-DT-AN at presentation provide empirical support for these views. On the other hand, our meta-analytic results also indicate that NFP-AN exhibits less severe eating pathology than conventional AN, with effect sizes in the medium to large range. These quantitative findings provide some support for the conceptualization of NFP-AN as a distinct variant or disorder from conventional AN. Future studies utilizing taxometric analyses with multiple clinically relevant indicators would be necessary to determine whether these effects support categorical or dimensional differences between AN and NFP-AN.

Fourth, follow-up studies report inconsistent findings. Two of these suggest a more benign course,[45,55] another one demonstrates similar response to treatment,[54] and another demonstrates a higher mortality rate associated with low-DT-AN.[56] Thus, existing data are insufficient to support the potential predictive validity of subtyping AN by presence or absence of fat phobia.

Fifth, there are no family or twin studies directly assessing the heritability of NFP-AN.

What Are the Options for DSM-V Coverage of NFP-AN?

In 1993, Hsu and Lee called for careful assessment, treatment, and follow-up of NFP-AN patients, in part to characterize better their course, outcome, and overlap with AN.[62] Subsequently, the NIMH-sponsored Culture and Diagnosis Committee recommended to the DSM-IV Task Force on cultural issues that a description of NFP-AN be included as an example of EDNOS.[64] Fifteen years later, there are still insufficient data to clarify the relation between NFP-AN and AN. That said, extant data support heterogeneous presentations of AN that are geographically widespread and not associated with any one particular cultural context. Concerns remain, moreover, that lack of visibility for NFP-AN may undermine service delivery if clinicians are poorly equipped to recognize or evaluate these cases. On the basis of our review, we propose five possible coverage options for NFP-AN in DSM-V (Table 3).

1. **Modify or eliminate diagnostic criterion B (i.e., the requirement for fear of weight gain or "fat phobia") for AN**

   One option would be to eliminate the requirement for "fat phobia" to meet diagnostic criteria for AN. Relatedly, criterion B could be modified to allow more flexibility in rationale for food refusal or low weight. As Russell asserts, the centrality of body disturbance first emerged in Bruch's work in the 1960s and fear of fatness was not incorporated as a diagnostic criterion for AN until 1970.[65] He proposed a "pathoplastic" model in which fear of weight gain is (culturally) epiphenomenal to the core pathology of AN.[65] Lee et al. have been the most vociferous critics of the ethnocentrism of the current criteria and have proposed greater flexibility.[40] Following these arguments, several investigators have proposed additional modifications for criterion B. Alternate phrasings could include (1) a "phenomenologically pluralistic conceptualization of self-imposed emaciation,"[38] (2) "ego-syntonic" weight loss,[4] (3) "no control phobia" referencing the negotiation of social (and often gendered) powerlessness,[3] or (4) "overinvestment" in eating restraint.[2]

TABLE 3. Possible options for representing non-fat-phobic AN in DSM-V

	Pros	Cons
1. Modify or eliminate diagnostic criterion B (i.e., the requirement for fear of weight gain or "fat phobia") for AN	• Would allow flexibility to encompass cultural variation in AN symptoms • Would promote the recognition of NFP-AN in clinical and community samples • Would reduce the proportion of individuals currently diagnosed with EDNOS	• NFP-AN appears to represent a milder variant of eating pathology than typical AN • Criterion B conceptually overlaps with Criterion C • Diagnostic specificity could be reduced
2. Subtype AN according to the presence or absence of fat phobia	• NFP-AN is associated with less severe eating pathology, which may indicate the presence of clinically meaningful subtypes	• NFP-AN may represent a heterogeneous group • Subtypes may be difficult to differentiate because of the diagnostic crossover between AN and NFP-AN and the dimensional nature of drive for thinness • Comparative outcomes for AN and NFP-AN remain unclear • Superimposition of a second AN subtyping scheme may reduce clinical utility
3. Include NFP-AN as a provisional category nominated for further research	• May stimulate necessary research on NFP-AN (i.e., treatment outcome studies, longitudinal follow-up)	• May reify NFP-AN even if data are insufficient to support its clinical utility
4. Include NFP-AN as an example of EDNOS	• May promote clinical recognition of NFP-AN and may facilitate access to healthcare services • Inclusion of this variant allows flexibility for cultural diversity in EDs	• NFP-AN is already treated as an EDNOS variant in many research studies and has been identified in many clinical settings, so this relatively minor revision may not have much practical impact • It may be difficult to differentiate between AN and EDNOS given lack of consensus on operationalizing fat phobia
5. Do not include NFP-AN in DSM-V	• Conservative approach to inadequate data supporting the diagnostic validity of NFP-AN	• At least some data indicate that NFP-AN is associated with morbidity and mortality • Individuals with NFP-AN may have difficulty accessing appropriate healthcare services if clinicians are uninformed about this variant

Notes: AN, anorexia nervosa; NFP-AN, non-fat-phobic AN; EDNOS, eating disorder not otherwise specified.

The first advantage of rephrasing criterion B in DSM-V to encompass alternate rationales for food refusal is to avoid ethnocentrism that may be inherent in the fat phobia criterion. That is, a fat-phobic rationale for self-starvation depends upon a social context in which weight concerns are culturally salient. The second advantage would be to avoid the potential reification of the construct of eating pathology by diagnostic criteria based on, and measures initially developed for use in, Western populations. For example, the items comprising the EDI-DT scale may reference cultural norms that are not widely accessible or relevant to populations outside of North America.[10] Indeed, norms for this construct appear to vary across even culturally similar populations.[66,67] In addition to the cultural relevance of specific item content, response style[10]—which can also be culturally driven—may have contributed to cross-population differences. A third advantage would be improved detection of NFP-AN in clinical and community settings by encouraging the use of screening instruments that do not require fat phobia for diagnosis. Crow et al.'s finding that the latent class most resembling NFP-AN exhibited greater mortality than the latent class most resembling conventional AN[56] suggests that this group has significant pathology and risk that should not be overlooked. A fourth benefit would be the elimination of a substantial minority of cases from the heterogeneous EDNOS category. Individuals with NFP-AN present to eating disorder specialty clinics across the globe. Even in selected Western samples, ~17[48] to 38%[47] of consecutively referred patients with AN-like symptoms (i.e., low weight, amenorrhea) either do not meet the fat phobia criterion or present with low DT. However, these prevalence estimates have unknown generalizability to other clinical settings.

However, we also note several disadvantages associated with modifying the requirement for fat phobia. First, our meta-analytic findings indicate that both NFP-AN and low-DT-AN exhibit lower levels of eating pathology than conventional AN, even when utilizing conservative definitions of eating pathology, which exclude constructs with the potential for overlap with fat phobia. Second, the conceptual overlap between DSM-IV criterion B ("intense fear of gaining weight or becoming fat, even though underweight") and criterion C ("disturbance in the way in which one's body weight or shape is experienced")[1] makes this approach problematic. How body image disturbance is manifest and assessed in the absence of weight concerns would require close examination.[44] Third, to date NFP-AN has been studied mainly within the context of eating disorder specialty clinics where eating-related clinical impairment is a prerequisite for study inclusion. Thus, the sensitivity and specificity of the diagnosis in nonspecialty and community samples remain unknown, and without positive indicators of eating disorder psychopathology (i.e., criteria B and C), it may be difficult to differentiate NFP-AN from low body weight because of (1) constitutional leanness, (2) co-occurring psychiatric illnesses associated with weight loss such as depression or conversion disorder,[68] (3) co-occurring physical illnesses associated with vomiting and weight loss such as achalasia,[69] and (4) volitional restriction of caloric intake for potentially less pathological reasons (i.e., in hopes of achieving longer life as in "caloric restriction for longevity"[70]).

2. Subtype AN according to the presence or absence of fat phobia

A second way to represent NFP-AN in DSM-V would be to partition AN into fat-phobic versus non-fat-phobic subtypes. This option would feature the benefit of recognizing the similarities between NFP-AN and conventional AN, while simultaneously reflecting research findings supporting their differential severity and course. However, there are insufficient data to support subtyping at this time. Observed differences in eating pathology in fat-phobic versus NFP-AN may reflect bias related to response style such as denial and minimization, which are common among individuals with AN.[71,72] Individuals with AN who wish to provide a misleadingly positive account of their illness due to the egosyntonic nature of low body weight or the demand for social desirability may score low on both attitudinal and behavioral measures of eating pathology.[48] Moreover, findings of similar treatment outcomes for AN and low-DT-AN following inpatient CBT,[54] and the diagnostic crossover between NFP-AN and conventional AN in longitudinal studies[38] provide preliminary evidence that subtyping AN in this way may not be diagnostically valid. Finally, a reliable and clinically meaningful distinction

between NFP-AN and AN may be problematic. Given the dimensional nature of DT and related constructs, the reliability and validity of a threshold distinguishing the two subtypes require further examination. Furthermore, the introduction of a secondary subtyping scheme—which would be superimposed on the extant "restricting" versus "binge-eating/purging" subtyping scheme[1]—may impose an unjustifiable burden of complexity on DSM readership.

3. **Include NPF-AN as a provisional category nominated for further research**

   Including NFP-AN as a category for future research would feature many of the advantages of altering the fat phobia criterion or subtyping AN into fat-phobic versus non-fat-phobic (i.e., enhanced clinical recognition, stimulation of further research), but avoid some of the possible pitfalls (i.e., including non-eating-disordered individuals in the AN category).[62,64]

4. **Include NFP-AN as an example of EDNOS**

   Another way to represent NFP-AN in DSM-V is as an example of EDNOS. This would feature the advantage of enhanced clinical detection and stimulation of research, without undermining the validity of the conventional AN diagnosis. On the other hand, NFP-AN may be overlooked in clinical and research settings if it is added to an already heterogeneous residual category. Another pitfall is the potentially arbitrary process of differentiating between AN and NFP-AN in clinical practice. The majority of NFP-AN studies have conferred diagnoses based on qualitative interviews, and although both EDI and EDE items have been utilized as proxies for fat phobia, there is no clearly accepted measure of this construct.

5. **Do not include NFP-AN in DSM-V**

   In our view, the least appealing option would be to continue to exclude NFP-AN from DSM-V. This option disregards data supporting both cultural diversity and heterogeneity of AN. Failure to address the variations of clinical presentation runs the risk of reifying the extant nosologic criteria presented in the DSM through assessments that specifically capture relevant data but may miss cultural variants.[50,73,74] Setting aside broader questions raised about increasing flexibility of diagnostic criteria across DSM-V, the literature on NFP-AN suggests that to accommodate cultural diversity clinicians would benefit from an awareness of cultural patterning of the rationale for food refusal and alternate motivation for eating disorder symptoms. Unfortunate ethnic disparities in treatment access and outcomes persist for mental disorders in the United States. Sensitivity to cultural diversity in presentation will potentially enhance recognition and prompt treatment.[22,23,36]

Conclusion

In summary, available data on NFP-AN are insufficient to meet our standard for diagnostic validity—either as a distinct diagnosis or as an AN subtype. Notwithstanding rich ethnographic and clinical details, the literature lacks a specific and consistent definition and operationalization of NFP-AN. Because the relation of NFP-AN and low-DT-AN remains unclear, findings from low-DT-AN studies cannot be extrapolated to apply to NFP-AN with confidence. Although our meta-analysis of published data suggests that NFP-AN may be a more clinically benign variant of AN or disorder, the small number of studies as well as some inconsistency in findings suggest that further studies are necessary.

The proposed revision of criterion B to encompass greater phenomenologic diversity has great appeal on theoretical and practical grounds. However, we emphasize the inadequacy of existing data to support that NFP-AN and AN are variants of a single syndrome. On the other hand, NFP-AN has enduring and substantial presence in geographically and culturally diverse populations, and available data support its clinical significance. Raising its visibility by inclusion as an example of a common presentation of EDNOS will arguably enhance clinical detection. In turn, this will facilitate further research to describe NFP-AN and explore the critical role of social environment in shaping symptom phenomena and in modifying risk and course of AN.

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References

1. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders: Text Revision, 4th ed. Arlington, VA: American Psychiatric Association, 2000.
2. Palmer RL. Weight concern should not be a necessary criterion for the eating disorders: A polemic. Int J Eat Disord 1993;14: 459–465.
3. Katzman MA, Lee S. Beyond body image: The integration of feminist and transcultural theories in the understanding of self starvation. Int J Eat Disord 1997;22:385–394.
4. Rieger E, Touyz SW, Swain T, Beumont PJ. Cross-cultural research on anorexia nervosa: Assumptions regarding the role of body weight. Int J Eat Disord 2001;29:205–215.
5. Lee S. Anorexia nervosa in Hong Kong: A Chinese perspective. Psychol Med 1991;21:703–711.
6. Habermas T. In defense of weight phobia as the central organizing motive in anorexia nervosa: Historical and cultural arguments for a culture-sensitive psychological conception. Int J Eat Disord 1996;19:317–334.
7. Robins E, Guze SB. Establishment of diagnostic validity in psychiatric illness: Its application to schizophrenia. Am J Psychiatry 1970;126:983–987.
8. Thomas JJ, Vartanian LR, Brownell KD. The relationship between eating disorder not otherwise specified and officially recognized eating disorders: Meta-analysis and implications for DSM. Psychol Bull 2009;135:407–433.
9. Fairburn CG, Cooper Z, O'Connor ME. Eating Disorder Examination. In: Fairburn CG, editor. Cognitive Behavior Therapy and Eating Disorders, 16.0D ed. New York: Guilford, 2008, pp. 265–308.
10. Garner DM, Olmstead MP, Polivy J. Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. Int J Eat Disord 1983;2:15–34.
11. Garner DM, Olmsted MP, Bohr Y, Garfinkel PE. The Eating Attitudes Test: Psychometric features and clinical correlates. Psychol Med 1982;12:871–878.
12. Parry-Jones WLL. Archival exploration of anorexia nervosa. J Psychiatr Res 1985;19:95–100.
13. Bemporad JR. Self-starvation through the ages: Reflections on the pre-history of anorexia nervosa. Int J Eat Disord 1996;19: 217–237.
14. Ong YL, Tsoi WF, Cheah JS. A clinical and psychosocial study of seven cases of anorexia nervosa in Singapore. Singapore Med J 1982;23:255–261.
15. Norvell N, Cooley E. Diagnostic issues in eating disorders: Two cases of atypical eating disorders. Int J Psychiatry Med 1986–1987;16:317–323.
16. Lee S, Chiu HFK, Chen C. Anorexia nervosa in Hong Kong: Why not more in Chinese? Br J Psychiatry 1989;154:683–688.
17. Banks CG. Culture in culture-bound syndromes: The case of anorexia nervosa. Soc Sci Med 1992;34:867–884.
18. Banks CG. There is no fat in heaven: Religious asceticism and the meaning of anorexia nervosa. Ethos 1996;24:107–135.
19. Goh SE, Ong SB, Subramaniam M. Eating disorders in Hong Kong [correspondence]. Br J Psychiatry 1993;162:276–277.
20. Lee S. Self-starvation in context: Towards a culturally sensitive understanding of anorexia nervosa. Soc Sci Med 1995;41:25–36.
21. Ung EK, Lee S, Kua EH. Anorexia nervosa and bulimia—A Singapore perspective. Singapore Med J 1997;38:332–335.
22. Ratan D, Gandhi D, Palmer R. Eating disorders in British Asians. Int J Eat Disord 1998;24:101–105.
23. Kam WK, Lee S. The variable manifestations and contextual meanings of anorexia nervosa: Two case illustrations from Hong Kong. Int J Eat Disord 1998;23:227–231.
24. Ngai ES, Lee S, Lee AM. The variability of phenomenology in anorexia nervosa. Acta Psychiatr Scand 2000;102:314–317.
25. Lai KYC. Anorexia nervosa in Chinese adolescents-does culture make a difference? J Adolesc 2000;23:561–568.
26. Chan ZC, Ma JL. Family themes of food refusal: Disciplining the body and punishing the family. Health Care Women Int 2002;23:49–58.
27. Bennett D, Sharpe M, Freeman C, Carson A. Anorexia nervosa among female secondary school students in Ghana. Br J Psychiatry 2004;185:312–317.
28. Steinhausen HC, Neumärker KJ, Vollrath M, Dudeck U, Neumärker U. A transcultural comparison of the Eating Disorder Inventory in from East and West Berlin. Int J Eat Disord 1992;12:407–416.
29. Neumarker U, Dudeck U, Vollrath M, Neumarker KJ, Steinhausen HC. Eating attitudes among adolescent anorexia nervosa patients and normal subjects in former West and East Berlin: A transcultural comparison. Int J Eat Disord 1992;12:281–289.
30. Kok LP, Tian CS. Susceptibility of Singapore Chinese schoolgirls to anorexia nervosa-Part I (Psychological factors). Singapore Med J 1994;35:481–485.
31. Soomro GM, Crisp AH, Lynch D, Tran D, Joughin N. Anorexia nervosa in 'non-white' populations. Br J Psychiatry 1995;167: 385–389.
32. Striegel-Moore RH, Schreiber GB, Pike KM, Wilfley DE, Rodin J. Drive for thinness in black and white preadolescent girls. Int J Eat Disord 1995;18:59–69.
33. Lee S, Lee AM, Leung T. Cross-cultural validity of the Eating Disorder Inventory: A study of Chinese patients with eating disorders in Hong Kong. Int J Eat Disord 1998;23:177–188.
34. Sjostedt JP, Schumaker JF, Nathawat SS. Eating disorders among Indian and Australian university students. J Soc Psychol 1998;138:351–357.
35. Pike KM, Mizushima H. The clinical presentation of Japanese women with anorexia nervosa and bulimia nervosa: A study of the Eating Disorders Inventory-2. Int J Eat Disord 2005;37:26–31.
36. Tareen A, Hodes M, Rangel L. Non-fat-phobic anorexia nervosa in British South Asian adolescents. Int J Eat Disord 2005;37: 161–165.
37. Lee HY, Lock J. Anorexia nervosa in Asian-American adolescents: Do they differ from their non-Asian peers. Int J Eat Disord 2007;40:227–231.
38. Lee S, Lee AM, Ngai E, Lee DTS, Wing YK. Rationales for food refusal in Chinese patients with anorexia nervosa. Int J Eat Disord 2001;29:224–229.
39. Khandelwal SK, Saxena S. Anorexia nervosa in people of Asian extraction. Br J Psychiatry 1990;157:783–784.
40. Lee S, Ho TP, Hsu LKG. Fat phobic and non-fat phobic anorexia nervosa: A comparative study of 70 Chinese patients in Hong Kong. Psychol Med 1993;23:999–1017.
41. Lee AM, Lee S. Disordered eating and its psychosocial correlates among Chinese adolescent females in Hong Kong. Int J Eat Disord 1996;20:177–183.
42. Kleinman A. Illness Narratives: Suffering, Healing and the Human Condition. New York: Basic Books, 1989.
43. Blashfield RK, Sprock J, Fuller AK. Suggested guidelines for including or excluding categories in the DSM-IV. Compr Psychiatry 1990;31:15–19.
44. Hsu LG, Sobkiewicz TA. Body image disturbance: Time to abandon the concept for eating disorders? Int J Eat Disord 1991;10: 15–30.
45. Strober M, Freeman R, Morrell W. Atypical anorexia nervosa: Separation from typical cases in course and outcome in a long-term prospective study. Int J Eat Disord 1999;25:135–142.
46. Willenberg H, Krauhauser H. ["Weight phobia". A discussion of the problem of "atypical" and "not otherwise specified" eating and weight disorders]. Psychother Psychosom Med Psychol 2000;50:134–139.

47. Abbate-Daga G, Piero A, Gramaglia C, Gandione M, Fassino S. An attempt to understand the paradox of anorexia nervosa without drive for thinness. Psychiatry Res 2007;149:215–221.
48. Ramacciotti CE, Dell'Osso L, Paoli RA, Ciapparelli A, Coli E, Kaplan AS, et al. Characteristics of eating disorder patients without a drive for thinness. Int J Eat Disord 2002;32:206–212.
49. Joughin N, Crisp AH, Halek C, Humphrey H. Religious belief and anorexia nervosa. Int J Eat Disord 1992;12:397–406.
50. Lee S, Kwok K, Liau C, Leung T. Screening Chinese patients with eating disorders using the Eating Attitudes Test in Hong Kong. Int J Eat Disord 2002;32:91–97.
51. Noma S, Nakai Y, Hamagaki S, Uehara M, Hayashi A, Hayashi T. Comparison between the SCOFF questionnaire and the Eating Attitudes Test in patients with eating disorders. Int J Psychiatr Clin Pract 2006;10:27–32.
52. Lau LLS, Lee S, Lee E, Wong W. Cross-cultural validity of the Eating Disorder Examination: A study of Chinese outpatients with eating disorders in Hong Kong. Hong Kong J Psychiatry 2006;16:132–136.
53. Vervaet M, van Heeringen C, Audenaert K. Is drive for thinness in anorectic patients associated with personality characteristics? Eur Eat Disord Rev 2004;12:375–379.
54. Dalle Grave R, Calugi S, Marchesini G. Underweight eating disorder without over-evaluation of shape and weight: Atypical anorexia nervosa? Int J Eat Disord 2008;41:705–712.
55. Lee S, Chan YY, Hsu LK. The intermediate-term outcome of Chinese patients with anorexia nervosa in Hong Kong. Am J Psychiatry 2003;160:967–972.
56. Crow S, Swanson S, Peterson C, Crosby R, Wonderlich S, Mitchell J.Mortality from eating disorders: Association with latent class. Paper Presented at the R-13 Meeting on Eating Disorders: Classification and Diagnosis, Washington, D.C., September 2008.
57. Rutherford J, McGuffin P, Katz RJ, Murray RM. Genetic influences on eating attitudes in a normal female twin population. Psychol Med 1993;23:425–436.
58. Wade TD, Wilkinson J, Ben-Tovim D. The genetic epidemiology of body attitudes, the attitudinal component of body image in women. Psychol Med 2003;33:1395–1405.
59. Wade TD, Bulik CM. Shared genetic and environmental risk factors between undue influence of body shape and weight on self-evaluation and dimensions of perfectionism. Psychol Med 2007;37:635–644.
60. Reichborn-Kjennerud T, Bulik CM, Kendler KS, Roysamb E, Tambs K, Togersen S, et al. Undue influence of weight on self-evaluation: A population-based twin study of gender differences. Int J Eat Disord 2004;35:123–132.
61. Wade T, Martin NG, Tiggemann M. Genetic and environmental risk factors for the weight and shape concerns characteristic of bulimia nervosa. Psychol Med 1998;28:761–771.
62. Hsu LK, Lee S. Is weight phobia always necessary for a diagnosis of anorexia nervosa? Am J Psychiatry 1993;150:1466–1471.
63. Lee S. Reconsidering the status of anorexia nervosa as a western culture-bound syndrome. Soc Sci Med 1996;42:21–34.
64. Weiss MG. Eating disorders and disordered eating in different cultures. Cult Psychiatry 1995;18:537–553.
65. Russell GFM. The changing nature of anorexia nervosa: An introduction to the conference. J Psychiatr Res 1985;19:101–109.
66. Kordy H, Percevic R, Martinovich Z. Norms, normality, and clinical significant change: Implications for the evaluation of treatment outcomes for eating disorders. Int J Eat Disord 2001;30:176–186.
67. Schaeffer WK, Maclennan RN, Yaholnitsky-Smith S, Stover ED. Psychometric evaluation of the Eating Disorder Inventory (EDI) in a clinical group. Psychol Health 1998;13:873–881.
68. Garfinkel PE, Kaplan AS, Garner DM, Darby PL. The differentiation of vomiting/weight loss as a conversion disorder from anorexia nervosa. Am J Psychiatry 1983;140:1019–1022.
69. Marshall JB, Russell JL. Achalasia mistakenly diagnosed as eating disorder and prompting prolonged psychiatric hospitalization. South Med J 1993;86:1405–1407.
70. Vitousek KM, Manke FP, Gray JA, Vitousek MN. Caloric restriction for longevity. II. The systematic neglect of behavioural and psychological outcomes in animal research. Eur Eat Disord Rev 2004;12:338–360.
71. Couturier JL, Lock J. Denial and minimization in adolescents with anorexia nervosa. Int J Eat Disord 2006;39:212–216.
72. Vitousek K, Watson S, Wilson GT. Enhancing motivation to change in treatment-resistant eating disorders. Clin Psychol Rev 1998;18:391–420.
73. Cummins LH, Simmons AM, Zane WS. Eating disorders in Asian populations: A critique of current approaches to the study of culture, ethnicity, and eating disorders. Am J Orthopsychiatry 2005;75:533–574.
74. Becker AE. Culture and eating disorders classification. Int J Eat Disord 2007;40 (Suppl):S111–S116.