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The Absent Body in Psychiatric Diagnosis, Treatment, and Research

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Abstract Discussions of psychiatric nosology focus on a few popular examples of disorders, and on the validity of diagnostic criteria. Looking at Anorexia Nervosa, an example rarely mentioned in this literature, reveals a new problem: the DSM has a strict taxonomic structure, which assumes that disorders can only be located on one branch. This taxonomic assumption fails to fit the domain of psychopathology, resulting in obfuscation of cross-category connections. Poor outcomes for treatment of Anorexia may be due to it being pigeonholed as an Eating Disorder, when a disturbance of body perception may be a more central symptom than food restriction. This paper explores the possibility of restructuring the DSM taxonomy to allow for a pluralist classification of disorders. This change could improve treatment and research without requiring any changes to diagnostic criteria.

Keywords psychiatric nosology · DSM · Anorexia Nervosa · body perception · taxonomy · RDoC

1 Introduction

The Diagnostic and Statistical Manual of Mental Disorders (DSM) of the American Psychiatric Association (APA) has been criticized for several shortcomings which affect its utility as a clinical tool as well as its usefulness

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in directing research (a function for which it was not designed, but is regularly used). Its diagnostic categories lack construct and predictive validity, are heterogeneous (individuals with the same diagnosis may not share any symptoms), and co-morbidities are common (see Kupfer et al (2002); Kendell and Jablensky (2003); Insel et al (2010); Hyman (2010); Poland (2014); Tabb (2015), among others). Many of these critics are optimistic that the Research Domain Criteria (RDoC) provide a more appropriate framework for organizing psychiatric research and eventually classifying disorders.

Here I focus on a disorder that has received very little attention in theoretical discussions of psychiatric nosology, but which reveals a different problem with DSM-based classification affecting both clinical and research contexts: the reification of chapter-level categories. I argue that the RDoC does not entirely avoid this problem, as samples of research subjects are often drawn based on DSM categories. I suggest a simple change to the taxonomic structure of the DSM that would solve this problem, quite possibly leading to improved treatment outcomes.

I begin by motivating why the particular disorder I focus on is an important one to consider. Next I argue that an entrenched assumption that it belongs in one chapter of the DSM and not others has led to some important features of the disorder being overlooked in treatment and research, which might explain why outcomes for this disorder are so poor. Finally I describe a simple measure that would make cross-category connections more visible, and discuss this change to the DSM taxonomy in relation to alternative proposals for overhauling psychiatric classification.

2 The Absent Body

Schizophrenia is perhaps the most discussed disorder in psychiatric nosology. This is unsurprising, given that it is not uncommon at around 1.1% 12-month prevalence (National Institute of Mental Health, 1993), and that it can be a devastating diagnosis. The disorder that will be the focus here has a lifetime prevalence estimated at 0.6% (National Institute of Mental Health, 2007), and estimates for the newer 'broad' criteria in the DSM-5 are 2% to 4.3% in women and 0.24% to 0.3% in men (Smink et al, 2012). In addition to being relatively common, this disorder has the highest mortality rate of all psychiatric disorders (between 10% to 20%), comparable to that of substance abuse. It is difficult to treat, with response rates of about 50% even for the most effective treatments (Wildes and Marcus, 2015), and a high relapse rate (up to 65%) following both inpatient and outpatient interventions. Reviews of treatment effectiveness make bleak statements like "there is a pressing need to develop more effective treatments... because their outcome is poor" (Fairburn, 2005). A survey of clinicians concludes that there is no consensus on any consistently effective treatment (Herzog et al, 1992). In terms of both its human costs, and clinicians' inability to effectively treat it, it is a disorder that should concern us very much. As a very rough indication of how unbalanced the coverage of

these two disorders is, Kendler and Parnas (2012) has 48 index entries under schizophrenia, but none for anorexia nervosa (AN) or eating disorders (ED).

Anorexia Nervosa is a disorder that is widely misunderstood, and not always taken very seriously by the general public, because it is seen as an exaggerated response to the cultural pressures of the popular media urging girls and women to be thin. Certainly cultural pressures and changing beauty standards play some role in AN's increasing prevalence in Western countries throughout the 20th century, and continuing spread to other cultures. There are almost certainly looping effects in play too. But the role of these cultural factors has been overblown. The incidence of AN in Europe has stabilized since 1970, although onset has shifted earlier, with more 15-19 year old girls being diagnosed (Smink et al, 2012). Charland et al (2013) describe how the onset of AN is insidious: "It often starts as dieting to lose some weight and then gets out of hand." Zipfel, the director of an ED unit in Germany, describes the same thing: that some people react to dieting in a way that sets off a self-reinforcing cycle that is very difficult to stop (personal communication). Halmi, longtime director of the Cornell ED clinic, seems to agree. Examining a series of historical cases, she concludes that that they were not "starving themselves to be beautiful, but rather fasting for a variety of different reasons," and that "the common denominator in these cases is that severe food restriction spiraled out of control" (Halmi, 2009, 163).

If you read first person reports of what AN is like on Ana-Mia websites[1], or in case studies like those in Malson (1998), several things are striking. One is that the cases are heterogeneous. In addition to cases where the motivation is to be thin, it can be about self-control, self-punishment, wanting to disappear, positive reinforcement to achieving goals, perfectionist obsession, or the lack of any sense of one's body. Even where achieving a thin body is a goal, it can be motivated in multiple ways, many of which have little to do with beauty norms. In some cases, weight loss only becomes a goal after diagnosis and the beginning of treatment, in response to clinicians' concern with weight. The people making these testimonials feel misunderstood by their families, friends and doctors. One of the women diagnosed with AN interviewed in Malson (1998) claims that "a lot of psychiatrists don't know what they're talking about... it shouldn't be looked at on the surface. It shouldn't be looked at as an eating, just an eating problem." Eating (or not eating) is tangential to the struggle of many people with AN, at least as they see it. This is backed up by evidence from a latent class analysis of ED patients, which found that the group with the highest mortality rate are patients with restrictive type AN *without* fear of weight gain (Crow et al, 2012, 228).

Some individuals with AN acknowledge being very thin, but they typically deny the serious medical implications of their malnourished state. Providing information about healthy body weights, or attempting to change their minds about beauty ideals is largely ineffective, perhaps because the problem

[1] Online communities that provide pro-anorexia/bulimia safe spaces where people who severely restrict their diets share their experiences and offer support.

is not holding false beliefs about healthy eating. A number of other psychiatric symptoms are frequently associated with AN, including depression, obsessive-compulsive behaviors, anxiety, perfectionism, inflexible thinking, restrained emotional expression, and personality disorders.

There are also a number of physical symptoms characteristic of starvation, and significant medical complications arise when people with AN try to start eating. Some of these are outlined in the APA's *Practice Guideline for the Treatment of Patients With Eating Disorders*:

> Initial refeeding may be associated with mild transient fluid retention, but patients who abruptly stop taking laxatives or diuretics may experience marked rebound fluid retention for several weeks. As weight gain progresses, many patients also develop acne and breast tenderness... Patients may experience abdominal pain and bloating with meals from the delayed gastric emptying that accompanies malnutrition... With severely malnourished patients (particularly those whose weight is <70% of their healthy body weight) who undergo aggressive oral, nasogastric, or parenteral refeeding, a serious refeeding syndrome can occur. Initial assessments should include vital signs and food and fluid intake and output, if indicated, as well as monitoring for edema, rapid weight gain (associated primarily with fluid overload), congestive heart failure, and gastrointestinal symptoms. (Yager et al, 2006)

Between the complications of refeeding, associated psychiatric symptoms, and denial of illness, treating AN is extremely challenging, involving much more than putting away the fashion magazines and eating a meal.

3 Categorizing and Classifying AN

AN has been recognized as a distinct clinical phenomenon since at least the 17th century, and some believe that cases of religious fasting from much earlier were undiagnosed AN (Halmi, 2009). AN appeared in the first edition of the DSM, and since the major revisions of DSM-III has been classified as a [Feeding and] Eating Disorder. The wording of the diagnostic criteria has evolved significantly. Early in the 20th century, AN was thought to be an endocrine or metabolic disorder (Farquharson and Hyland, 1938), with amenorrhoea figuring as an important symptom. Mid-century, the influence of the entertainment and fashion industries on dietary restriction became a more central concern. In recent years, both amenorrhoea and 'fear of fatness' have been removed or de-emphasized in the diagnostic criteria. The Eating Disorders Work Group leading the DSM-IV revision recommended removing references to feeling "fat" and replacing them with "denial of the seriousness of current low body weight, or undue influence of body shape and weight on self-evaluation," explaining that "many patients who clearly have anorexia nervosa do not describe the distortion of body image in classic terms"(Wilson and Walsh, 1991).

Since much of the discussion of DSM-based nosology bears on DSM-IV-TR, we'll begin with those criteria for a diagnosis of AN, based on American Psychiatric Association (2000):

- Criterion A: A refusal to maintain bodyweight at or above a minimally normal weight for age and height (eg, weight loss leading to a maintenance of bodyweight less than 85% of that expected, or failure to make expected weight gain during period of growth, leading to bodyweight less than 85% of that expected).
- Criterion B: Intense fear of gaining weight or becoming fat, even though underweight.
- Criterion C: Disturbance in the way in which ones bodyweight or shape is experienced, undue influence of bodyweight or shape on self-evaluation, or denial of the seriousness of the current low bodyweight.
- Criterion D: In postmenarcheal females, amenorrhoea—ie, the absence of at least three or more consecutive menstrual cycles.

There is a restricting subtype and a binge/purge subtype.

One of the main issues identified with these diagnostic criteria is that the Eating Disorder Not Otherwise Specified (EDNOS) diagnosis "is the most common eating disorder diagnosis given in outpatient clinical settings" (Wilfley et al, 2007). One study showed that of cases diagnosed as EDNOS, "47% were AN without amenorrhea, 28% AN with greater than 85% ideal body weight (but more than a 20% reduction of initial weight)" (Wilfley et al, 2007). There is also considerable diagnostic instability within the ED group. Diagnoses often change from AN, Bulimia Nervosa (BN), or EDNOS to one of the other three over time, then sometimes back again. Milos et al (2005) found that more than half of the patients they studied migrated from one ED diagnosis to another over a 30 month period. (See also Fichter and Quadflieg (2007); Eddy et al (2008); Ackard et al (2011).)

In response to these concerns, the DSM-5 (American Psychiatric Association, 2013) removed Criterion D. Criterion A was reworded to focus on restricting energy intake rather than refusing to maintain a minimal weight, and removed the explicit 85% weight cutoff. Criterion B was changed to include persistent behaviour that interferes with weight gain as an alternative to fear of weight gain. Criterion C was reworded slightly to read thus: "Disturbance in the way one's bodyweight or shape is experienced, undue influence of body shape and weight on self-evaluation, or persistent lack of recognition of the seriousness of the current low bodyweight" (American Psychiatric Association, 2013). The frequency of purging for a diagnosis of BN was also lowered, and diagnostic criteria for Binge Eating Disorder (BED) were introduced in this edition.

Castellini et al (2011) studied diagnostic crossover and comorbidity comparing DSM-IV and DSM-5 criteria. They found that while most DSM-IV EDNOS patients were reclassified with AN, BN, or BED according to DSM-5 criteria, and crossover from BN to AN was less frequent, the crossover from AN to BN remained consistent. The still significant diagnostic crossover between

AN and BN raises the worry that AN may not be a valid category. A number of researchers argue that further changes should be adopted in addition to those introduced in DSM-5, such as adding dimensions to the diagnostic criteria, or completely overhauling the classification of EDs based on evidence-based classification methods like taxometric or clustering analyses.

Gleaves et al (2000) used taxometric methods to examine whether AN and BN differ from each other and from normality quantitatively or qualitatively (i.e., suggesting a dimensional or categorical distinction). They found that the binge/purge subtype of AN falls on a continuum with BN, but the restricting subtype differs qualitatively. Sloan et al (2005) used cluster analysis, which revealed "clusters resembling AN, restricting type, BN, and binge-eating disorder" (Sloan et al, 2005, 53). They found that individuals in a high-frequency binge/purge cluster previously met the criteria for AN, suggesting that the focus in diagnosis on current symptomatology may be responsible for the "common diagnostic shifts from AN to BN" (Sloan et al, 2005, 59). Williamson et al.'s (2005) review of dimensional and categorical analyses suggests a latent taxon related to binge eating, and two dimensions continuous with normalcy (concern with body image, and drive for thinness). AN restricting subtype is high on both dimensions, but does not involve binge eating, while BN, BED, and AN binge/purge subtype all do involve binge eating, but vary in terms of the two dimensions. In a taxometric study with a larger sample size, Olatunji et al (2012) did not find evidence for a latent taxon, nor for distinct AN subtypes. That study used only an inpatient sample, so patients were similar in terms of severity of illness and level of clinical impairment, which the authors say may have contributed to their findings.

In addition to these studies that look at how to classify patients within the ED group, some investigations also look beyond ED symptoms, to personality variables and comorbidity data. Wildes and Marcus (2013a) argue for incorporating information about comorbid psychopathology into systems of classifying EDs, on the grounds that clinically relevant measures like trauma history and treatment response differ between comorbid and non-comorbid patients (Wildes and Marcus, 2013a, 384). Some of the factors investigated include impulsivity, emotional receptivity, rigidity and compulsivity, and inhibition or avoidance. A review of dimensional methods finds that "Undercontrolled, overcontrolled, and low psychopathology subtypes have demonstrated superiority relative to categorical ED diagnoses in predicting clinical outcomes [and] are associated more strongly with hypothesized risk factors for EDs (e.g., genetic liability, childhood trauma) than are current ED diagnoses (Wildes and Marcus, 2013b, 399). Dazzi and Di Leone (2014) review several proposals for revising the diagnostic criteria of ED, including trans-diagnostic models that would do away with the ED categories, and either focus on characteristic features common to all the EDs, or place them on a continuous spectrum defined by personality traits.

Although there is not yet a clear consensus on how best to classify ED patients, many of the studies pointed to AN restricting subtype being a distinct

clinical phenomenon. Including information about comorbid psychopathology and personality factors into diagnostic decisions may be worthwhile.

A notable absence in the literature on classification of EDs is that despite significant discussions of within-chapter nosological issues, there is no discussion of whether the ED chapter is the most appropriate place for AN. The taxometric and clustering analyses mentioned above do not consider, for example, whether Autism Spectrum Disorder (ASD) is an ED, nor whether AN is an Anxiety Disorder. A much broader analysis would be required to answer questions about whether a given disorder, like AN, is best classified within one chapter of the DSM or another, and whether some chapters should be lumped together, or others split apart.

In the next section I argue that AN's membership the ED chapter (and only the ED chapter, given the DSM's taxonomic structure) may be hindering progress in understanding and treating the disorder. In Poland's wide-ranging criticism of the DSM, one complaint he makes is that the DSM categories are defined in terms of "superficial and proto-scientifically conceived aspects of clinical phenomenology" (Poland, 2014). Eating is about as superficial an aspect of clinical phenomenology as it gets. Not eating may be a readily observable signs of the disorder, but what is most obvious to observers is not always the best focus of treatment.

3.1 AN as an Eating Disorder

The assumption that AN is all about dieting and the pursuit of thinness is entrenched in western culture and in mainstream psychiatry, although feminist scholars have for many years offered alternative narratives of AN (see Bartky (2002); Knapp (2010); Pelluchon (2015); Schwartzman (2015)). One hopeful sign that this entrenched view of AN may be waning is the recent development of effective treatment options that do not focus on weight gain. See Touyz et al (2013), which had lower drop out rates than any other clinical studies of adult AN (Touyz et al, 2013, 2509). However, this entrenchment is still evident in the focus of treatment options most commonly offered for AN, and the research questions addressed.

Looking first at treatment options, the first stage of care typically consists of re-feeding and nutritional counseling. Psychotherapy is considered ineffective at this stage, because of the compromised cognitive state of individuals near starvation. In practice, many individuals are released from hospital after re-feeding, because more targeted treatments are not available locally, or are financially out of reach. Adequate treatment can involve lengthy hospital stays or intensive outpatient programs, which can be prohibitively expensive, depending on insurance schemes. Individuals with severe and enduring AN are often refused coverage by insurance companies, or are discharged to generic services, on the grounds that they (by definition) do not respond to treatment (Touyz et al, 2013, 2501-2502).

In one US study, there was a large gap between the "usual care" supported by insurance companies, and "adequate care" representing restoration of healthy weight, plus follow-up. Average hospital stays were 7 days for usual care, and 45 days for adequate care, costing $36,200 and $119,200 respectively (Crow and Nyman, 2004, 157–158). A US study that surveyed 22 residential treatment programs found an average stay of 83 days, and average treatment costs of $79,348 (Frisch et al, 2006, 436). Current estimates from a US insurance provider's website indicates that inpatient treatment costs on average $30,000 per month, with stays often ranging from 3 to 6 months, and that outpatient care can cost $100,000 or more, which may not be covered by insurance plans (Psych Guides, 2016).

In a Canadian study of inpatient treatment costs, hospital stays averaged 37.9 days, with an average cost of $51,349 CAD (or approximately $52,889 US[2]) (Toulany et al, 2015, E194). In a UK study, average costs for inpatient care over 2 years (90% of which was due to hospital stays of an average of 73 days) were £34,371 (or approximately $63,000 USD[3]) (Byford et al, 2007, 439). A German study found inpatient treatment stays of 49.8 days on average, with care per patient, including convalescence and rehabilitation, costing approximately €24,900 (or around $23,500 USD[4]) (Krauth et al, 2002, 246).

The APA's *Practice Guideline for the Treatment of Patients With Eating Disorders* describes three categories of treatment recommendations: Nutritional rehabilitation, Psychosocial interventions, and Medication. Nutritional rehabilitation and medication focus exclusively on correcting weight and eating behaviours. All of the medications mentioned in the guidelines have the aim of speeding up weight gain, although none have been reliably shown to improve outcomes (Fairburn, 2005; Yager et al, 2006).[5]

Psychosocial interventions are where one might expect the non-eating-related symptoms like fear, avoidance, and distorted body perception to be addressed. According to these guidelines, the goals of psychosocial interventions for AN are to help patients "1) understand and cooperate with their nutritional and physical rehabilitation, 2) understand and change the behaviors and dysfunctional attitudes related to their eating disorder, 3) improve their interpersonal and social functioning, and 4) address comorbid psychopathology and psychological conflicts that reinforce or maintain eating disorder behaviors" (Yager et al, 2006). Half of these goals are aimed at psychosocial problems rather than eating-related behaviors.

These guidelines do not offer much advice in choosing psychosocial intervention methods: "Few controlled studies offer guidance for the psychosocial treatment of anorexia nervosa" (Yager et al, 2006). Part of the problem is that randomized controlled trials with AN patients suffer from high dropout rates. Cognitive Behavioural Therapy (CBT) to change habitual patterns of thought

[2] The 2013 exchange rate of US$1 = Can$1.03 is given in the text.

[3] Based on the average exchange rate for 2004.

[4] Based on the average exchange rate for 2002.

[5] The 2012 update to the APA Practice Guideline claims that the document remains "substantially correct and current in its recommendations" (Yager et al, 2014).

and behaviour is the most common psychosocial intervention. For children and adolescents with good family relationships, methods focusing on family therapy have proven quite successful.

Notably, these guidelines do not suggest any treatments that directly target Criterion C. Rosen (1996) found that most treatment programs offer no interventions that target body image, although body image is the best predictor of "fluctuations in eating disorder symptoms over time" (Rosen, 1996). They suggest that "more systematic body image work should be incorporated into current treatment" (Rosen, 1996). A study of relapse risk by Keel et al (2005) found that "Greater body image disturbance contributed to a risk of relapse" and similarly concluded that "focused body image work during relapse prevention may enhance long-term recovery from eating disorders" (Keel et al, 2005, 2263). A 2012 study echoes the sentiment that body image disturbances "have often been neglected or ascribed only secondary importance in ED treatment programmes" (Ferrer-García and Gutiérrez-Maldonado, 2012, 1). A study of US residential eating disorder programs found that on average patients spent only 50 minutes per week on body image therapy, slightly less than the 54 minutes spent on yoga (Frisch et al, 2006, 438). A survey of service providers in 12 European countries found that physical therapy (which may include Body Awareness Therapy) is included in the inpatient services in 8 of 12 countries (Gowers et al, 2002). The particulars of treatment programs vary widely, with body image therapy included in many programs, but across treatment modalities and locations, the trend is a lack of emphasis on body image interventions.

Looking now at research, I found only three clinical studies that explicitly included body image interventions. Catalan-Matamoros et al (2011) did a pilot study using Body Awareness Therapy, which is a form of physiotherapy that "focuses on self-exploration and self-experience of movement quality, on the interplay between conscious being, doing and relating" (Catalan-Matamoros et al, 2011, 618). Wallin et al (2000) tested Body Awareness Therapy as an addition to Family Therapy for a small sample of adolescents, and found an improvement in Body Perception Index but no other significant results. Key et al (2002) did a pilot study using mirror therapy with the aim of improving body image, and found improvements in self-esteem and body satisfaction.

Most of the clinical studies of AN focus on CBT, comparing it to other kinds of psychotherapy (such as schema therapy), or to nutritional counseling alone (see Pike et al (2003); McIntosh et al (2005); Watson and Bulik (2013); Groff (2015)). The CBT-based therapies tested in these studies focus on "challenging dysfunctional thoughts and thought restructuring," "teaching strategies to reduce the risk of relapse," identifying problems in areas of "grief, interpersonal disputes, role transitions, and interpersonal deficits," (McIntosh et al, 2005) "cognitive and behavioral features associated with the maintenance of eating pathology," addressing issues related to "self-esteem, self-schema, and interpersonal functioning" (Pike et al, 2003), and additionally, "clinical perfectionism, core low self-esteem, and interpersonal difficulties" (Groff, 2015, 275). Body image interventions are sometimes included as part of these CBT

therapies, particularly when improving self-esteem is among the goals. However, Charland et al (2013) point out that "in both CBT and schema therapy, there is a substantial focus on cognitive aspects," which "may be distorting our perspective too much toward beliefs and rational analysis." The implicit assumption is that AN involves dysfunctional beliefs, not affective or perceptual problems. This cognitive focus may not be appropriate for treating Criterion C symptoms.

Criterion C is often summarized as a disturbance of body image.[6] Body image is a "multifaceted construct consisting of a variety of measured dimensions" (Thompson, 2004, 7). Because of this complexity, attempts to measure body image often mislabel or fail to label "the specific aspect of body image that the measure actually assesses" (Thompson, 2004, 8). It is a controversial notion "because of its lack of unifying positive definition" (de Vignemont, 2010, 671).

de Vignemont distinguishes body image from body schema, which includes representations of the body used for action. Body image includes perceptual, conceptual, and emotional representations of the body (de Vignemont, 2010, 671). The perceptual side includes not just visuo-spatial perception, but also proprioceptive, interoceptive, and vestibular perception. As Charland et al (2013) noted, psychotherapies for AN focus on cognition, which leaves out the perceptual and emotional elements of body image. Zucker et al (2013) observe that "the vast majority of research on body image disturbance in AN has examined cognitive components, such as body dissatisfaction and perceptual aspects such [as] visual image distortion, but has neglected the subjective *experience* of the body." This leaves out "interoceptive, exteroceptive, vestibular, and proprioceptive inputs" (Zucker et al, 2013, 2), which means that even where body image therapies are used, they typically address only a fraction of this complex construct.

Basic research into the causes of AN show a similar bias. For instance, Ghaderi (2003) claim to evaluate the risk factors for eating disorders, other than dieting, but only consider a narrow range of possible factors: "premorbid low self-esteem and perceived social support from the family, as well as high body concern and high relative use of escape avoidance coping" (Ghaderi, 2003). Only cognitive factors related to body image are included, while perceptual risk factors are left out.

That AN is classified as an *Eating* Disorder is a plausible explanation for why the symptoms not related to eating receive less attention from clinicians and researchers. The worry is that for many individuals, recovery from AN might depend on correcting a dysfunction of body perception, which re-feeding, nutritional counseling, and CBT are unable to address.

[6] The concept of body image may not exactly match the DSM description for Criterion C, but I'll set aside that worry.

3.2 Beyond Eating

Given its very high relapse rate and significant comorbidities, concerns about whether we need to rethink or expand our basic understanding of AN have previously been raised. One suggestion in the literature is that anxiety may be primary in AN, and that worries about weight may result from anxiety rather than the other way around (Charland et al, 2013). Another suggestion is that EDs might be thought of using an addiction model, where a dysregulation of reward circuits maintains disordered eating behavior (Yager et al, 2006; Halmi, 2009; Kaye et al, 2009; Frank et al, 2012). Here I focus on a third possibility, which is that it may be useful to think of AN in terms of a deficit in body perception.[7]

That body perception may be a central problem in AN makes particular sense in light of the very high comorbodity between AN and Body Dysmorphic Disorder (BDD). BDD is characterized by a delusion concerning the appearance of objectively normal body parts. According to Dingemans et al (2012), "In a sample of 200 individuals with BDD, 32.5% met the criteria for a lifetime comorbid eating disorder," and in a small study of women meeting DSM-IV criteria for AN, 39% also had BDD.

There is also high comorbidity between AN and Autism Spectrum Disorder (ASD).The connection between AN and ASD is spelled out in terms of impaired social functioning in Zucker et al (2007), and in terms of empathy and executive function in Oldershaw et al (2011). However many ASD researchers are shifting away from a focus on difficulties with communication and social interaction, toward thinking that hyper- or hyposensitivity to some sensory modalities, or deficits in multisensory integration are the disorder's key features (see, for example, Iarocci and McDonald (2006); Marco et al (2011)). It may be that it is these shared perceptual difficulties that explain the overlap between AN and ASD.

The mechanisms underlying AN's deficit in body perception are understudied (Khalsa et al, 2015), and not well understood (Case et al, 2012). Some suggestions are that it is rooted in problems with interoception (Pollatos et al, 2008), tactile or somatosensory perception (Keizer et al, 2012), multisensory integration (Case et al, 2012), or sensitivity to sensory experience (Zucker et al, 2013). Studies of functional anatomy suggest that there may be damage to right parietal lobe (Case et al, 2012; Christman et al, 2007), or insula and striatum (Kaye et al, 2009). (See Kaye et al (2010) for a review of brain imaging findings.)

Interoception is the sense of the physiological condition, or internal state of the body. Interoceptive Deficit (ID) is the best predictor for AN across all diagnostic criteria (Clausen et al, 2011). Improvements in ID correspond with decrease in AN symptoms at long-term follow-up, and ID in young girls is predictive of illness severity 5-10 years later (Merwin et al, 2010). Despite

[7] Given AN's complex etiology, all three approaches may prove helpful.

these signs that interoception[8] has clear clinical relevance for AN, its role "has remained relatively understudied"(Khalsa et al, 2015).

Only a few studies have looked at the role of interoception in AN. At low levels of bodily arousal, "Individuals with AN had difficulty detecting and separating actual interoceptive sensations from anticipated ones" (Khalsa et al, 2015). Relatedly, individuals who had recovered from AN "showed a mismatch between anticipation and objective responses [to pain], suggesting altered integration and, possibly, disconnection between reported and actual interoceptive state" (Strigo et al, 2013). The results of Crucianelli et al (2016) suggest that the body perception deficit in individuals with AN "may in part be linked to their weakened interoceptive perception."

There is also experimental evidence suggesting that the body perception deficit in AN may be a problem of how interoceptive and proprioceptive signals are integrated with exteroceptive signals like visual cues. Individuals with AN are more susceptible to the Rubber-Hand Illusion (Eshkevari et al, 2012), as are individuals with low IA (Tsakiris et al, 2011). Since this illusion involves a feeling of ownership over a limb that clearly doesn't belong to the subject's body, these results suggest that poor interoception might be closely related to the distorted body representations characteristic of AN. A deficit either in IA or in how interoceptive signals are integrated with exteroceptive ones may explain why some individuals with AN see a distorted image when they look at themselves in the mirror.

Mirror exposure has shown some promise as a treatment for the body image disturbance in AN. Key et al (2002) attribute its success in their study to an emotional response, however, in addition to variables related to self-esteem and body satisfaction, IA also improved after mirror therapy in their study, raising the possibility that improved interoception may be responsible for mirror therapy's effectiveness. Ainley et al (2012) demonstrate that self-observation in a mirror improves interoceptive sensitivity for individuals with low baseline interoceptive sensitivity. Patients with AN have low interoceptive sensitivity (Pollatos et al, 2008). Mirror therapy has also been effective in correcting judgments of limb ownership in somatoparaphrenia, which is thought to result from a dissociation between first- and third-person body representations (Fotopoulou et al, 2011). Similarly, Riva's allocentric lock hypothesis proposes that AN involves a deficit in integrating sensory input from egocentric and allocentric reference frames (Riva, 2011, 284).

Inspired by this work on mirror therapy, Virtual Reality (VR) is emerging as a tool for treating body image disturbances (see Riva (2011); Ferrer-García and Gutiérrez-Maldonado (2012)). Piryankova et al (2014) show that estimates of one's own body size can be manipulated by having participants embody overweight or underweight avatars in a VR environment. Using a similar method, Keizer et al (2016) induced a full body illusion on AN patients,

[8] Interoceptive awareness (IA) and ID are conceptualized as measuring opposite directions of the same construct, and while highly correlated, are measured using very different protocols (heartbeat detection versus questionnaire), so should be considered two distinct clinical indicators. For simplicity, I'll use them as antonyms here.

and found that it causes improvements in body size estimation that were still present at follow-up several hours later. These experimental VR-based treatments for AN so far are only being studied in a few European clinics.

This evidence of a possible link between body perception and AN etiology is a promising route to explore in the search for more effective long-term treatments of AN. Therapies that correct deficits in interoceptive awareness and/or multisensory integration should be taken very seriously as treatment goals, as their neglect may be partly responsible for the poor outcomes of standard AN treatments. That the body image disturbance in AN may be rooted in the perceptual system, over which individuals have little to no conscious control, makes sense of the fact that treatment with CBT, which targets cognition, comes with a high risk of relapse. It also helps to explain why individuals with AN have little awareness of the seriousness of their condition, and tend to deny their illness, just as do individuals with somatoparaphrenia. Deficits in body perception are not available to conscious cognition, and are not affected by changes in beliefs about the body, but may be malleable using therapies that directly target perceptual processing.

Because AN is classified as an *Eating* Disorder, deficits in interoception or multisensory integration have so far not been been given adequate attention, and clinicians working in ED clinics may lack the psychological training to assess these perceptual deficits. Furthermore, because AN is classified as an *Eating* Disorder, links to Depression, Anxiety, BDD, Personality Disorders, and reward circuitry are under-researched. Because AN is connected to dieting and extreme thinness in the popular imagination, men and non-underweight individuals are likely under-diagnosed. AN is much more than just an *Eating* Disorder.

4 Revising the Structure of the DSM Taxonomy

I have argued that diagnostic Criterion C, body image disturbance, is largely overlooked in research and treatment of AN, despite evidence suggesting that it is the best predictor of outcomes, and preliminary research suggesting that there may be effective interventions. I have also argued that where it is treated directly, it is often treated is as a cognitive problem, when it may in fact be a perceptual deficit. I also suggested that the reason for the lack of attention (and misdirected attention) to this central symptom might be that AN is classified as an *Eating* Disorder.

To be clear, I do not meant to suggest that AN is not an ED. Individuals with AN require the specialized care of an ED clinic, where they can receive careful re-feeding treatment. AN also has significant diagnostic crossover with other EDs. The problem is that reification at the level of DSM chapters can lead some aspects of disorders to be highlighted while others are neglected, which narrows the scope of treatment and research options pursued.

A similar problem of reification at the level of DSM diagnostic categories, i.e., particular disorders, has previously been raised. Hyman argues that the

DSM "creates epistemic blinders that impede progress toward valid diagnoses" (Hyman, 2010, 155). Although clinicians and researchers know that the DSM is just a heuristic tool, in practice, Hyman observes, "diagnoses controlled the research questions they could ask, and perhaps, even imagine" (Hyman, 2010, 157) to the detriment of the field.

Despite much having been written about how psychiatric disorders are classified, much less has been said about the classificatory assumptions embedded into the DSM's chapter structure, which has remained relatively stable from DSM-III onward. Blashfield et al (2014), reviewing the history of DSM revisions, mention a telling detail in passing: when Frances was chosen as leader for the DSM-IV revision, his first move was to create "the 13 workgroups responsible for the various subsections." In other words, the chapter structure was taken for granted from the beginning of that revision process. The DSM-5 revision process did involve discussion of higher-order nosological issues. Several possible courses of action considered include restructuring the DSM chapters to better capture current research, and replacing the DSM with an alternative classification system entirely based on etiology and risk factors. I'll review each of these in turn.

4.1 A DSM Meta-Structure

DSM-5 Task Forces considered several proposals for overhauling the chapter structure. As First recounts:

> Several conferences focused on the best way to group disorders within the DSM and ICD. The Deconstructing Psychosis Conference questioned the Kraepelinian boundary between schizophrenia and [bipolar disorder], raising the question of whether these 2 conditions, currently classified in 2 different sections of the classifications, are actually on a single continuum. The Comorbidity of Depression and Generalized Anxiety Disorder Conference, in consideration of the substantial overlap of depression and anxiety... recommended that, while these 2 disorders are distinct, they are nonetheless closely related and should be classified within the same superordinate diagnostic grouping. A third conference was entirely devoted to considering the viability of creating a new obsessive-compulsive spectrum grouping in DSM-5. (First, 2010, 697)

In addition, a Diagnostic Spectra Study Group was formed to "discuss grouping disorders descriptively on the basis of etiology and pathophysiology, rather than only by symptoms and syndromes" (Kupfer et al, 2008, 5). The result was a proposed meta-structure to replace the existing DSM chapter structure. This meta-structure included clusters for neurocognitive, neurodevelopmental, psychosis, emotional, and externalizing disorders. Disorders were allocated a priori to these clusters, then included or excluded based on research

related to 11 validating criteria. A sixth cluster for disorders of "bodily function," which included the EDs, was not evaluated due to "insufficient data" (Andrews et al, 2009, 1994).

Some of the motivations given for the proposed meta-structure are increasing clinical utility, especially for "non-specialists such as primary care physicians," increasing validity, by moving away from symptomatology, and towards "the current understanding of shared putative causal risk and clinical factors identified in research," and reducing comorbidities (Wittchen et al, 2009, 2083). The proposal was not taken up in DSM-5, because of methodological issues and a lack of supporting evidence: "It is not based on systematic reviews, meta-analyses or statistical taxometric approaches... the kind of comprehensive and definitive evidence that might support a major overhaul of the classification system in psychiatry simply does not exist at present" (Jablensky, 2009, 2099).

Several pragmatic concerns were also raised against changing the chapter structure. One is that the current chapters are reflected in psychiatric textbooks, the domains of professional and advocacy groups, and the topics of subspecialty journals, all of which "illustrate a tendency for DSM decisions to become reified" (First, 2009, 2091). Another is that "grouping disorders around predominant presenting symptoms greatly facilitates differential diagnosis, which is one of the core functions of the diagnostic assessment process (First, 2009, 2093). In addition, "both DSM and ICD have made it possible to increase diagnostic agreement among clinicians; improve the statistical reporting on psychiatric morbidity; instill more rigorous diagnostic standards in psychiatric research; and reduce the scope for idiosyncrasies in the teaching of psychiatry by providing an international reference system" (Jablensky, 2009, 2100).

Jabelnsky also questions the motivations for developing a meta-structure, arguing that "classifications are of little use to researchers, who must be free to use any definitions of disorders they find relevant to their hypotheses, and also to pool or split disorders across any of the sections of the 'official classification" (Jablensky, 2009, 2100). Two more general arguments for conservatism in DSM revisions concern patients having stable diagnoses and insurance coverage across DSM editions, and diagnostic constructs maintaining stability (Sullivan, 2016) so that older research remains interpretable despite changing diagnostic criteria.

Kendler (2009) raises several theoretical issues about the meta-structure proposal. He points out that each of the organizing principles considered (clinical similarity, clinical utility, etiology) might result in a different meta-structure, and furthermore, that etiology could be broken down into multiple levels "genes, neurobiology, neuropsychology, personality, etc." which may not agree (Kendler, 2009). Goldberg et al (2009) discuss such an example. In terms of clinical features, bipolar disorder (BPD) could be grouped with either the emotional cluster or the psychosis cluster.

Another theoretical issue Kendler raises is whether the basis for the categories ought to be the same for all types of disorders, or vary depending on type

(Kendler, 2009). The International Classification of Diseases (ICD), for example, uses a variety of organizational principles: "infectious diseases are grouped by anatomical location... type of organism... and mode of transmission... and diseases of the circulatory system are divided according to pathophysiology... and anatomy" (First, 2009, 2092). As Zachar (2008) notes, although phenotypic similarity is supposed to be the basis for DSM-IV classification, this "has not been followed consistently, sometimes being overridden by theoretical preferences" (Zachar, 2008, 339). The example he gives is schizotypy being classified as a personality disorder rather than with the schizophrenia spectrum. Although the meta-structure proposal was rejected, a revamping of DSM chapters based on further research and using evidence-based classification methods remains on the agenda for future revisions.

4.2 Classification with RDoC

Another possibility for reforming psychiatric nosology is to completely overhaul the DSM based on the results of the RDoC project, the purpose of which is "to create a framework for research on pathophysiology, especially for genomics and neuroscience, which ultimately will inform future classification schemes" (Insel et al, 2010, 748). The hypothesis driving the hope that RDoC can inform classification, is that genomic and neurobiological parameters will "predict prognosis or treatment response" (Insel et al, 2010, 750).

Some examples of how genomic and neurobiological parameters might prove useful for diagnosis are the following,

> If a BDNF polymorphism identifies people with anxiety syndromes who do not respond to behavior therapy, if a copy number variant defines a form of psychosis with high remission rates, if neuroimaging yields a subtype of mood disorder that consistently responds to lithium, RDoC could provide a classification scheme that will improve outcomes. (Insel et al, 2010, 750)

This sort of evidence could help direct patients toward more effective treatments, personalized to their particular combination of parameters across levels of the RDoC matrix. The downside of an aggressive splitting strategy, however, is that you lose generalizability of results, and the ease of diagnosis for which the DSM was designed.

A further wrinkle with deriving ever more detailed cut-points based on genomics and neurobiology is that different levels in the RDoC matrix may suggest different cut-points. In the example above, the results apply to different diagnoses, but we could discover neurotrophic factor polymorphisms, copy number variants, and neuroimaging results all pertaining to, say, anxiety. Since these can cross-cut one another (see Khalidi (1998, 2013)), we might end up with several competing suggestions as to how to subdivide anxiety into subgroups of patients based on different molecular, genetic and neural measures. The RDoC route thus does not promise a unique new classification, but rather many competing considerations.

RDoC also promises to solve one of the problems arising from reification of DSM categories. As many have pointed out, since DSM diagnoses are polythetic and heterogenous, patients with the same diagnosis may not share any symptoms or etiologic factors, and may not respond the same way to treatment. This poses a problem for research if DSM categories form the basis for choosing study participants. If a new drug works well on one subgroup of patients, but not on others, the positive results may not be detected when those subgroups are not differentiated. However, because the RDoC includes multiple independent levels, "samples might include patients spanning multiple DSM diagnoses" (Insel et al, 2010, 749), and needn't include all patients with a given diagnosis. Subgroups could be formed as needed, and those who respond differently could be separated out, at least in principle. For example, Insel et al. suggest that,

> a study of working memory might recruit patients from a psychotic disorders clinic, with the independent variable a genetic polymorphism and dependent variables comprising cognitive performance and neuroimaging of dorsolateral prefrontal cortex activation. A study of fear circuitry might include all patients presenting at an anxiety clinic, with an independent variable of defense-system reactivity (e.g., fear-potentiated startle) and dependent variables comprising scores on fear, distress, and symptom measures. (Insel et al, 2010)

Note that this sampling strategy begins by including all patients found at, for example, a psychotic disorders clinic, or an anxiety clinic. Implicit in this strategy for finding appropriate samples of patients is the assumption that all the relevant patients will be found at the same clinic. The patients in a psychotic disorders clinic will be ones diagnosed within the DSM's Schizophrenia Spectrum and Other Psychotic Disorders family, and the patients in an anxiety clinic will be ones diagnosed within the DSM's Anxiety Disorders family. We might easily imagine another example where researchers choose their sample from among the patients found at an ED clinic. If the researchers are interested in patients with distorted perceptions of their bodies, sampling from an ED clinic will miss patients with somatoparaphrenia, and BDD. Likewise, patients with AN will be left out of many samples in which they might have been appropriate to include if recruiting happens at an anxiety or personality disorder clinic, for example. The symptoms or constructs that give the best clues to etiology and treatment response may not be those symptoms that bring patients into the clinic.

Researchers may tailor their subject pools more cleverly than this to a given research question, but having researchers depend on their intuitions about which clinical populations to draw from is not a reliable way of capturing all the patients relevant for investigating a given cell of the RDoC. For researchers to form unbiased groups of research subjects, they have to be aware of links between diagnoses that cross DSM category boundaries. Often the non-diagnostic features of disorders are not well documented, however, so a lot of digging needs to be done to fish them out. Tabb claims that "RDoC

researchers can gather whatever populations are pertinent to their domain of interest" (Tabb, 2015). This may be true in principle, but it is too optimistic in practice.

To gather appropriate samples of patients, researchers need a way of classifying subjects into the relevant groups. Jablensky is right to claim that researchers need to pool or split disorders across sections, but this does not mean that classifications are of little use to researchers. The examples Insel et al (2010) give of recruitment strategy suggest that RDoC research currently depends on DSM chapters for doing this work of generating research samples. DSM chapters do not allow for the gathering of whatever populations are pertinent to any domain of interest, nor to pool or split across sections, since the DSM classifies patients into a single rigid hierarchy. In the near term, RDoC research seems to depend on DSM classifications instead of providing an alternative classification system.

4.3 A Pluralistic Approach to Classification

In this final section I defend the idea of allowing for a more pluralistic DSM taxonomy in which disorders can be included in multiple chapters. Recall Kendler's question about whether a single organizing principle should be used for classifying all types of disorder. For both clinical and research purposes, we have seen that there is a need for multiple ways of classifying disorders. One simple illustration of this is how Pica and Rumination have bounced back and forth between the ED chapter and 'Disorders Usually First Diagnosed in Infancy, Childhood, or Adolescence' from one DSM edition to the next. There are competing needs pulling these diagnoses in different directions. The DSM-5 revision got rid of the childhood onset chapter, instead listing disorders in *every* chapter by age of onset, but this is not a general solution to the problem of competing interests.

Recall also the question Kendler raised about how to decide on a classification when different validators point to different cut-points. As Zachar notes, clustering and taxometric analyses will only get you so far, because in a complex domain like mental health, these analyses will not yield one unique answer. Zachar concludes that, "Once various stabilities are mapped out, the question of how to classify them will still require nosological decisions" (Zachar, 2008, 351). The claim that a decision needs to be made between several competing ways of classifying, none of which is superior given diverse classificatory needs, belies a hidden assumption. The assumption is that we need a unified taxonomy (or perhaps two separate ones for clinical and research purposes, as Bluhm (2017) suggests), instead of a pluralist solution, where multiple ways of classifying are simultaneously endorsed.

This assumption is nearly ubiquitous in analyses of psychiatric nosology. An example is Goldberg et al.'s (2009) discussion of whether to put BPD in the emotional or the psychosis cluster of the proposed DSM meta-structure. They offer three possible ways of resolving the dilemma: place it in the emotional

group, the psychosis group, or in a group all its own. This overlooks a fourth logical possibility: BPD could be placed in *both* groups. Another example is how although Hyman (2010) recognizes that "Goals such as clinical utility and validity do not specify unique taxonomies," his suggestion is to regroup disorders into "large clusters or families based on the best current etiological or neurobiological hypotheses" (Hyman, 2010), as though a new taxonomy can solve the problem of there not being a unique taxonomy.

Zachar reflects on the case of schizotypal personality / disorder, which is grouped with the personality disorders in the DSM, but with schizophrenia in the ICD. It is helpful that the disorder is classified in different ways in the two systems, Zachar argues, because "having alternative models better reflects the domain of psychiatric disorders," which he characterizes as a structure with "many overlapping levels" (Zachar, 2008, 339–340). He goes on to explain:

> Certain types of information about schizotypal personality may emerge in the study of personality disorders and other types of information emerge in the study of schizophrenia-related disorders. Both types of information might have practical importance, but it would not be available to someone who is too literal about any one system. (Zachar, 2008, 339–340)

In other words, classifying a disorder in more than one group tears off the epistemic blinders that would otherwise limit the research questions and treatment options that can be asked or imagined.

My proposal is that without changing any diagnostic criteria, and without getting rid of the current DSM chapters, a significant improvement to DSM classification could be achieved by allowing disorders to be cross-listed under multiple chapters. Current classification could guide where each diagnosis's 'primary' listing appears, which would be where full information is given and differential diagnosis is negotiated. Secondary listings would at a minimum mention where to find the primary listing, and possibly give details specifically relevant to the secondary chapter(s).

More chapters could eventually be added, as needed, based on evidence from taxometric and clustering analyses, as well as RDoC-based research, although a conservative approach to growing the taxonomy should be pursued so as not to expand the manual beyond the point of usability. Manuals for other mental health specializations like social work, epidemiology, and public health might devise their own sets of chapters with which to classify DSM diagnoses. The DSM need not directly reflect the needs of all stakeholders, but could make itself more compatible with their needs by adopting a pluralist chapter structure.

Some taxonomic purists like Kay (1971) insist that the term 'taxonomy' should only apply to structures with certain formal properties, namely ones that are tree-like: parent categories strictly include daughter categories, and the only permitted relations between distinct taxa are either mutual exclusion or strict inclusion. This describes the current structure, but would rule out the overlapping and cross-cutting groups I'm proposing. Less strict taxonomies

are, however, not a new thing, even in biology, where taxonomies were first developed to solve the species problem. As Zachar (2008) describes, cladistic models are strict taxonomies based on the assumption that "evolution occurs by a parental group being split up into two or more lines of descent" (Zachar, 2008, 347). Evolutionary systematists, in contrast, "recognize that scientific classification serves multiple purposes" (Zachar, 2008, 350), so allow other considerations like degree of divergence to overrule the strict taxonomy that phylogeny would dictate.

Recall the collection of pragmatic and theoretical concerns raised earlier against changing the DSM chapter structure. Maintaining the current chapters as primary would get around many the disadvantages cited of switching to a new meta-structure: textbooks, professional associations, and journals would not be made obsolete. Clinical utility's dependence on diagnoses being based on readily observed signs and symptoms would not be affected. Diagnostic discrimination depends on chapters containing groups of disorders that cannot be diagnosed together, which can still work as currently if only primary chapter memberships are considered. Improvements in diagnostic agreement, statistical reporting, and diagnostic standards that later editions of the DSM introduced would also remain in force. Continuity of diagnosis, insurance coverage, and construct stability, which all depend on diagnostic criteria remaining stable, would also be unaffected. Grouping similar disorders together helps clinicians find the right diagnosis, so including disorders in more chapters could help with this, especially when the symptoms that bring a patient into the clinic are not the primary ones.

In the case of AN, ED could remain the primary chapter, but it would be worth exploring whether other chapters like Anxiety Disorders and Personality Disorders wouldn't also make sense. A new chapter for body image disorders would also help make Criterion C more salient. Likewise, Pica and Rumination might keep primary affiliation in ED, but also be listed in a reinstated chapter for childhood onset disorders. Zachar's example of schizotypal personality is another plausible case where allowing for multiple classifications within the DSM might be beneficial. Hyman (2010) mentions that ASD might be classified either as a developmental disorder, or as a deficit in social cognition. Borderline personality disorder could also be cross-classified with emotional and psychotic disorders. Indeed, wherever we find high comorbidities, there are likely to be shared symptoms, risk factors, dimensions, or causal pathways, which might justify disorders being grouped together. If the next edition of the DSM were to expand its collection of chapters, and to adopt a pluralist policy of chapter membership, it could also benefit RDoC-based research, by supplying a more nuanced selection of groups on which to base study samples.

Rather than falling into a hierarchy or a fixed set of distinct clusters, psychiatric disorders are complex combinations of etiological factors, including genetic, anatomical, physiological, cultural, environmental, familial, and personal. Tabb and Schaffner (forthcoming) describe the ontological landscape that psychiatric disorders inhabit, using schizophrenia as an example that illustrates some of the same problems encountered here. They depict disorders

as collections of symptoms that cluster together into syndromes, but which also share biological pathways with other disorders. Tabb and Schaffner (forthcoming) describe how concepts of schizophrenia evolved since the 1990s to include cognitive dimensions in addition to the hallucinations and delusions traditionally taken to be its core symptoms. This evolution mirrors what I imagine might happen to concepts of AN if the body perception aspect were more widely recognized.

5 Conclusion

Anorexia Nervosa is a disorder that rarely gets mentioned in theoretical discussions about psychiatric nosology, despite its social significance. Here I examined how in both treatment and research, one of AN's diagnostic criteria is downplayed, despite several lines of evidence suggesting that treatment is not only possible, but may be central to improving AN's bleak outcomes. I suggest that this situation persists because AN is placed in the ED chapter of the DSM. While individuals with AN do require specialized ED treatment, AN is much more than just a problem with eating. If it could be classified in multiple chapters of the DSM, its connections to other disorders could be made visible. Changing the structure of the DSM taxonomy to allow for multiple classifications would better align the manual with the domain of psychopathology, resulting in better classifications for a number of disorders, and more flexible guidance for RDoC-based research.

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