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Men, Muscles, and Eating Disorders: An Overview of Traditional and Muscularity-Oriented Disordered Eating

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Abstract

Purpose of Review—There is growing recognition that eating disorder (ED) symptoms, particularly those of a muscularity-oriented nature, are more common in men than previously understood. The purpose of the current review is to describe contemporary directions and implications of research on traditional and muscularity-oriented ED symptoms among males.

Recent Findings—Evidence indicates that ED symptoms occur in a substantial minority of men. Importantly, recent research has focused on muscularity-oriented body image and disordered eating in males, demonstrating the prevalence, correlates, and consequences of maladaptive muscularity-oriented attitudes and behaviors. A growing number of assessments are available to measure these constructs in males, and preliminary treatment considerations have begun to be addressed in the literature.

Summary—Research on male EDs and body image is increasingly focusing on muscularity-oriented manifestations. Continued empirical work will be critical to improve our understanding of the onset, maintenance, and treatment of muscularity-oriented disordered eating in males.

Keywords

muscularity-oriented disordered eating; male eating disorders; male body image; muscularity; body dissatisfaction

Introduction

Eating disorders (EDs) have historically been considered among the most gendered of all psychiatric illness presentations. Despite the seminal case descriptions of EDs making reference to both female and male patients [1], large parts of the 20th century were characterized by the notion that EDs did not afflict males, or afflicted very few and atypical

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Compliance with Ethics Guidelines

Conflict of Interest

Jason M. Lavender, Tiffany A. Brown, and Stuart B. Murray declare that they have no conflict of interest.

Human and Animal Rights and Informed Consent

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males, since specific hallmark features (i.e., amenorrhea) did not apply to male patients. While this assertion eventually gave way to the notion that males account for approximately one in ten ED cases in the 1990s, more recent evidence suggests that males may represent approximately one in four presentations of disordered eating [2]. Further still, empirical evidence now suggests for the first time that (a) disordered eating behaviors are increasing at a faster rate in males versus females in community settings, and (b) that the correlates of these ED symptoms in males are equally severe as those reported by females [3]. As such, EDs in males are no longer considered a rarity, and to the contrary, evidence points to an unparalleled increase in the prevalence of male EDs.

Unfortunately, given the historical inattention to EDs among males, the explicit exclusion of male patients from the controlled studies that have informed development of the ED field is cause for concern. This exclusion may have inadvertently facilitated the development of ED diagnostic criteria and treatment approaches that are more oriented towards ED presentations among females [4]. To date, less than 1% of all ED research has focused specifically on presentations among males, and a significant ongoing challenge lies in ascertaining the extent to which clinical and empirical work with male ED patients can extrapolate from empirical studies designed for exclusively females with EDs [4].

The potential extrapolation of findings from largely female ED samples to males with EDs rests on the inference that ED presentations are fundamentally similar across sex, although mounting evidence now suggests noteworthy differences, particularly with regard to body image concerns. For instance, while ED psychopathology is centrally inclusive of an overvaluation of shape and weight, it is the overvaluation of a thin body ideal in particular that underlies many theoretical/treatment models and measures of ED psychopathology. This is reflected in current ED diagnostic criteria, which refer to failure to maintain minimally appropriate body weight, fear of weight gain, and compensatory behaviors intended to prevent weight gain. However, early studies of body image dissatisfaction in males revealed that many males reported wanting a *larger* body or endorsed a desire to *gain* weight [e.g., 5,6]. This notably contrasts with the drive for thinness that serves as the foundation of core body image-related ED diagnostic criteria. As research on male body image has progressed, important differences in the sociocultural body ideals for men and women in western societies have become evident. Contrasting with the thin ideal commonly ascribed to women, the ideal male body is typically characterized by a dual focus on leanness (i.e., low body fat) and muscularity [7].

This distinct male body ideal has numerous important implications for eating- and body-related attitudes, as well as associated behavioral manifestations. For instance, ED behaviors associated with achieving the thin ideal among women (e.g., purging) differ from the maladaptive behaviors that may be motivated by pursuit of a muscular ideal (e.g., anabolic steroid use). Further, the dual focus on both leanness and muscularity characterizing the male body ideal may motivate a particularly maladaptive set of behaviors designed to achieve these goals (e.g., rigid/extreme dieting behaviors and/or exercise routines, maladaptive use of appearance and performance enhancing drugs, etc.). Notably, muscularity-oriented concerns are also associated with muscle dysmorphia, currently classified as a specific form of body dysmorphic disorder [8], although researchers have

proposed that it exists on the ED spectrum [9]. Muscle dysmorphia predominately occurs among males and is defined by preoccupations with one's body being too small or inadequately muscular, resulting in significant distress and/or functional impairment and motivating various maladaptive behaviors to correct this perceived defect in appearance [8].

In sum, research within this area of the literature is increasingly focused on muscularity-oriented manifestations of disordered eating and related attitudes among men. In this review, we provide an overview of recent research and theory regarding muscularity-oriented body image and ED symptoms. We then review relevant assessment instruments for traditional and muscularity-oriented disordered eating. We conclude with a discussion of implications of prevention and treatment, as well as areas for future research.

Muscularity-Oriented Disordered Eating

Muscularity-oriented body image concerns and patterns of disordered eating behaviors among males are critically linked. In the United States, up to 60% of all boys report purposefully manipulating dietary practices in the pursuit of greater muscularity [10]. The salience of eating practices in muscularity-oriented body image concerns also extends to pathological presentations. For instance, a recent study of males with anorexia nervosa, males with muscle dysmorphia, and male controls illustrated elevated ED-related psychopathology in multiple domains across both groups [11]. Specifically, compared to controls, both groups evidenced higher scores on measures of traditional ED symptoms, including overall ED symptoms and specific symptoms such as dietary restraint, shape concerns, weight concerns, and compulsive exercise. Although some differences were found between the anorexia nervosa and muscle dysmorphia groups, with the former tending to report higher scores on traditional ED measures and the latter reporting higher scores on measures more sensitive to muscularity-oriented concerns, both groups demonstrated a similarly broad pattern of disturbances across body image, disordered eating, and exercise-related domains. In addition, the marked escalation of muscle dysmorphia symptomatology in response to a disruption to one's dietary regimen further underscores the salience of eating behaviors in muscularity-oriented body image concerns [12]. Perhaps tellingly, in diagnosing the cluster of symptoms that represent pathological muscularity-oriented body image concerns, a statistical majority of clinicians conceptualize this syndrome as an ED phenotype [13].

Additional evidence further supports strong associations between muscularity-oriented body image concerns and disordered eating in males. For instance, findings from a large-scale epidemiological study by Calzo et al. [14] revealed a distinct pattern of disordered eating that was driven by muscularity concerns, and featured an elevated risk of non-prescribed drug use. Further, evidence from Compte et al. [15] indicates that these maladaptive disordered eating patterns related to muscularity concerns may be equally as prevalent in males as traditionally-defined EDs are in females, suggesting an overall point prevalence of approximately 3-4%. Further, both Calzo et al. [14] and Compte et al. [15] found that disordered eating and body image concerns focused on muscularity were more prevalent in males than were concerns around thinness, underscoring the centrality of muscularity-

oriented manifestations of body dissatisfaction and associations with disordered eating symptoms.

Muscularity-oriented disordered eating refers to an array of disordered eating behaviors that are driven by the pursuit of the muscular ideal. In concert with shifting male body ideals that currently emphasize both muscularity and leanness, and reflecting the somewhat mutually exclusive goals of muscular development and a body fat reduction, muscularity-oriented disordered eating may refer to eating behaviors designed to either increase muscularity, or reduce one's body adiposity, which enhances the visibility of one's musculature [4]. The 'bulk and cut' dietary practice refers to the periodic oscillation in dietary practices, towards either muscular density or muscular leanness related goals, respectively [16]. During 'bulking' phases, the overregulation of protein consumption is characteristic, with arbitrary rules relating to the amount of protein consumption (i.e., 3 lbs of protein per 1 lb of bodyweight), the timing of protein consumption (i.e., every 3 hours), and the type of protein consumption (i.e., bulk preparing all meals ahead of time), and deviation from which cause marked distress [12,16,17]. However, during the course of bulking phases, it is not uncommon for dissatisfaction with muscular leanness to emerge. That is, as one focuses on the caloric surplus necessary to support muscle growth, the acquisition of greater body adiposity may also result in the incremental dissatisfaction with muscular leanness. As such, a 'cutting phase' involves the restriction of all dietary energy, which is typically oriented towards the reduction in body fat, which enhances the visibility of muscularity. However, the restriction of dietary energy may also impact muscular development, such that dissatisfaction with muscular density emerges during a cutting phase. Thus, body dissatisfaction remains throughout both bulking and cutting phases, and a cyclical dietary pattern may emerge.

Alongside these bulking and cutting behaviors, a relatively recent eating phenomenon associated with the pursuit of the muscular ideal is the concept of 'cheat meals' [18,19]. Cheat meals refer to the discrete, planned or spontaneous, periodic departure from one's muscularity-oriented dietary regimen, in a manner that includes consumption of an array of prohibited or restricted foods. Such meals typically involve calorie dense foods in volumes ranging from 1,000-9,000 calories [19]. Curiously, cheat meals are thought to be goal-oriented [18]. Indeed, the influx of calories consumed through infrequent cheat meal engagement is thought to augment metabolic processes in the ongoing drive for muscular leanness. That is, interspersing strict dietary restriction with the sporadic influx of calories prevents metabolic adaptation to low dietary energy, and thus ensures that dietary fats are used as a primary energy source throughout periods of dietary restriction, which is thought to augment reductions in body fat without depleting muscularity [18]. While cheat meals are characterized by caloric volumes commensurate with binge eating episodes, and may also include a subjective loss of control and strict compensatory behaviors (i.e., reinvigorated exercise practices, further dietary restraint), it is unclear whether these behaviors are associated with subjective distress whether they may overlap with other traditional symptoms of ED psychopathology.

Assessing Traditional and Muscularity-Oriented ED Psychopathology

Broad Appearance/Body Image Measures

Several measures are available that have utility for use in assessment of broader appearance concerns and body image among males. Two examples are the *Multidimensional Body-Self Relations Questionnaire-Appearance Scale* [MBSRQ-AS; 20) and the *Male Body Attitudes Scale* [MBAS; 21].

The MBSRQ-AS is a 34-item self-report questionnaire that assesses a number of body image-related domains. Scales included in this measure are: appearance evaluation (i.e., overall perceptions of attractiveness), appearance orientation (i.e., investment in appearance), body areas satisfaction (i.e., evaluation of discrete body areas), overweight preoccupation (i.e., weight preoccupation and related eating behavior), and self-classified weight (i.e., perceptions of weight status). The measure can be used with both male and female samples, and has evidenced good psychometric properties in a variety of samples [e.g., 20,22,23].

The MBAS is a 24-item self-report questionnaire developed specifically to assess body image in males. The measure provides a total score and three subscales reflecting dissatisfaction with body fat, muscularity, and height. Evidence supports the reliability and validity of the measure in various male populations [21,24,25].

Muscularity-Oriented Measures

Muscularity-oriented assessments are generally focused on capturing attitudes and/or behaviors related to pursuit of the muscular body ideal, such as the *Bodybuilder Image Grid-Original* [BIG-O; 26] the *Drive for Muscularity Scale* [DMS; 27], and the *Drive for Leanness Scale* [DLS; 28]. Measures are also available for muscle dysmorphia symptomatology characterized by extreme levels of muscularity-focused body image disturbance, including the *Muscle Dysmorphia Inventory* [MDI; 29], the *Muscle Appearance Satisfaction Scale* [MASS; 30], and the *Muscle Dysmorphic Disorder Inventory* [MDDI; 26].

The BIG-O is a male-specific figure-rating scale that assesses perceptual body image disturbance. Participants choose which of 30 male figures that vary in body fat and musculature best corresponds to their ideal and current body. Scores represent the direction and strength of desired change in dimensions of body fat and muscularity. The BIG-O has demonstrated good reliability and validity in male samples [26].

The DMS is a 15-item self-report questionnaire that assesses desires to be more muscular. The measure contains two subscales: Muscularity Attitudes and Muscularity Behaviors. The DMS has demonstrated good reliability and validity [27,31], and can be used with both male and female samples. Finally, the DLS is a 6-item self-report measure of the desire to have a lean body. The measure has demonstrated good reliability and validity in college-aged males [28].

The MDI is a 27-item self-report measure of the psychological and behavioral aspects of muscle dysmorphia. The measure contains six subscales: diet, supplement, physique protection, exercise dependence, size/symmetry, and pharmacology. Evidence supports the reliability and validity of the MDI in male samples [29].

The MASS is a 19-item self-report measure of muscle dysmorphia symptoms that contains five subscales: bodybuilding dependence, muscle checking, substance use, injury, and muscle satisfaction. The measure has demonstrated good reliability and validity among males [30].

The MDDI is a 13-item self-report questionnaire with three subscales designed to assess proposed diagnostic criteria for muscle dysmorphia [32]: drive for size, appearance intolerance, and functional impairment. The MDDI has demonstrated strong reliability and validity among males [26].

Broad ED Symptom Measures

Measures available for assessing broad ED symptoms among males include those focused on traditional ED symptoms, such as the *Eating Disorder Examination-Questionnaire* [EDE-Q; 33] as well as newer measures that assess both traditional and muscularity-oriented ED symptoms, such the *Eating Disorder Assessment for Men* [EDAM; 34] and the *Eating Pathology Symptoms Inventory* [EPSI; 35]

The EDE-Q, derived from the Eating Disorder Examination interview, is among the most widely used self-report measures of ED psychopathology in both male and female samples. The 28-item measure assesses traditional ED attitudes and behaviors, providing a global score, subscale scores (i.e., dietary restraint, eating concerns, shape concerns, weight concerns), and frequencies of certain ED behaviors (i.e., objective binge eating, self-induced vomiting, laxative use, and driven/compulsive exercise). The EDE-Q has received psychometric support, although the factor structure of the measure has been questioned [see 36]. Benefits of this measure include its broad historical use in research and clinical contexts and the availability of norms for various male populations [37–39]. However, it does not assess muscularity-oriented domains that are the focus of more recent empirical and clinical interest in males.

The EDAM is a 50-item self-report questionnaire developed to assess ED symptoms specifically among males. The measure contains five scales: food issues, weight concerns, exercise issues, body image/appearance concerns, and disordered eating habits. The measure has evidenced good psychometric properties and has been found to distinguish between males who do and do not have an ED [34].

The EPSI is a 45-item self-report questionnaire comprised of eight scales: binge eating, purging, excessive exercise, restricting, cognitive restraint, negative attitudes towards obesity, body dissatisfaction, and muscle building. The EPSI has demonstrated strong psychometric properties in both men and women has been found to distinguish between those who do and do not have an ED [35,40]. Additionally, norms are available for both male and females samples [40].

ED-Related Measures

Additional measures of potential utility in assessing ED-related behaviors among males include the *Obligatory Exercise Questionnaire* [OEQ; 41] and the *Compulsive Exercise Test* [CET; 42], as well as the *Male Body Checking Questionnaire* [MBCQ; 43].

The OEQ is a 20-item self-report questionnaire that assesses the frequency of exercise-related situations. The OEQ has demonstrated strong internal consistency and two-week test-retest reliability in males [44]. The CET is a 24-item self-report measure of the cognitive, behavioral, and emotional features of compulsive exercise. The measure contains five subscales: avoidance and rule-driven behavior, weight control exercise, mood improvement, lack of exercise enjoyment, and exercise rigidity. The CET has demonstrated strong psychometric properties in adolescents and adult males [42,45].

The MBCQ is a 19-item self-report questionnaire assesses the frequency of various body checking behaviors specific to males. The measure includes four subscales: global muscle checking, chest and shoulder checking, other comparative checking, and body testing. The MBCQ has demonstrated good reliability and validity in males samples [43,46].

Prevention and Treatment of Traditional and Muscularity-Oriented ED Psychopathology

Relatively few targeted prevention studies have been developed to specifically target concerns specific to males. Indeed, a systematic review by Watson and colleagues [47] reported that males represented 1% of participants in selected ED prevention programs. Based on recent research, dissonance-based interventions appear to have promise in reducing ED risk among males [48–50]. Such interventions, based in cognitive dissonance theory, engage participants in various verbal, behavioral, and written activities that argue against the body ideal perpetuated by society. This conflicting behavior increases dissonance or discomfort, which in theory helps reduce body ideal internalization and ED risk factors. Kilpela and colleagues [49] developed a mixed-gender dissonance-based program that demonstrated efficacy at reducing body dissatisfaction in multiple domains (i.e., body fat, muscularity, and overall) for male college students compared to waitlist control, with effects maintained through 6-month follow-up. Brown and colleagues [50] examined the efficacy of a dissonance-based intervention targeting traditional ED and muscle dysmorphia-related psychopathology and demonstrated greater improvements in body-ideal internalization, dietary restraint, bulimic symptoms, drive for muscularity, and muscle dysmorphia symptoms compared to waitlist post intervention and at 1-month follow-up. Supporting the posited mechanism of action, internalization of a lean, muscular body ideal mediated intervention effects on both bulimic symptoms and muscle dysmorphia symptoms.

To our knowledge, no specific treatments have been uniquely targeted to EDs in males. In the absence of specific studies, clinicians should employ evidence-based treatment programs for EDs, including: family-based therapy (FBT) for adolescents and young adults, cognitive-behavioral therapy for EDs (CBT/CBT-E), interpersonal psychotherapy (IPT), and dialectical behavior therapy (DBT). While relatively few treatment studies have included

males or examined gender as a treatment moderator, most research has demonstrated comparable outcomes across gender [51]. Male adolescents with bulimia nervosa actually demonstrated higher rates of binge/purge abstinence across both FBT and CBT compared to female adolescents [52]. For adult males, CBT administered in a residential treatment center has demonstrated similar improvements in rates of recovery [53] and quality of life after treatment [54] compared to females. Further, Shingleton and colleagues [55] found no sex differences in outcome across various treatment trials for binge eating disorder; however, they did find sex differences in treatment dose based on weight/shape concerns. Specifically, males reporting lower weight/shape concerns achieved binge eating remission in shorter treatments (12 or 16 weeks) compared to males reporting high weight/shape concerns and all females, who were more likely to achieve remission with a longer duration of treatment (20 or 24 weeks).

Similar to more traditional ED presentations in males, there has been limited treatment research addressing muscularity-oriented disordered eating and muscle dysmorphia. This is likely due to several factors including: difficulties related to the accurate diagnosis of muscularity-oriented disordered eating, the greater stigma attached to EDs in males, and the potential ego-syntonicity of muscularity-oriented disordered eating (in that these symptoms are perceived as goal-oriented). A recent case study detailed the successful adaptation of family-based treatment [FBT; 56] to an adolescent male with muscle dysmorphia [57]. This case adapted the primary tenets of FBT, mobilizing parental efforts into preventing the overregulation of foods deemed dietary protein and low in calories, and the compulsive muscle-building gym exercise regimen. Crucially, parents determined their course of intervention according to their behavioral observations, rather than patient weight, given that many patients displaying muscularity-oriented disordered eating are not required to gain weight. A further case study detailed the transition into muscularity-oriented disordered eating throughout treatment for anorexia nervosa [58], highlighting the transdiagnostic shift between thinness-oriented and muscularity-oriented ED presentations. In this case, the increasing drive for muscularity was masked throughout treatment for anorexia nervosa, where the treatment emphasis was on weight gain and volitional eating. Further, despite being discharged from treatment for anorexia nervosa, symptoms transitioned into a presentation of muscularity-oriented disordered eating [58].

Conclusion

Existing evidence suggests that a substantial proportion of males exhibit ED psychopathology, which may manifest as symptoms of traditionally defined EDs or as muscularity-oriented symptoms driven by the male-specific sociocultural body ideal. Recent research in this area has increasingly focused on muscularity-oriented body image and disordered eating, characterizing the unique behavioral patterns (e.g., cyclical restriction and bulking) associated with pursuit of the muscular ideal. Although the literature in this area is growing, additional research is needed. Specific questions for future research to address include factors that distinguish risk for the development of traditional versus muscularity-oriented ED symptoms in males, moderators and mediators of the divergence between traditional versus muscularity-oriented disordered eating, as well as the variables that contribute to the maintenance of these symptoms over time. Importantly, given the dearth of

specific intervention research in males, there is a great need for additional research on the prevention and treatment of traditional and muscularity-oriented ED psychopathology in males, which may draw upon approaches that have been supported in other related populations (e.g., females with EDs) or disorders (e.g., body dysmorphic disorder).

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