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Body image disturbance in 1000 male appearance and performance enhancing drug users ☆

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ABSTRACT

Body image disturbance (BID) among men has only recently become a phenomenon of clinical significance with noted heterogeneity in the behavioral consequences of these disturbances. The degree of heterogeneity among appearance and performance enhancing drug (APED) users is unknown and an empirically derived framework for studying BID is necessary. APED users ($N = 1000$) were recruited via the Internet and they completed a comprehensive online assessment APED use patterns, motivations, consequences, and BID. Data were evaluated using latent trait, latent class, and factor mixture models. Model results were validated using a range of covariates including cycle characteristics, age, APED history, and APED risk. A 1-Factor, 4-Class model provided the best fit to the data with Class 1 scoring the highest on all measures of BID and Class 4 the lowest on all measures. Class 2 differed in their preference for being lean over muscular and Class 3 preferred adding mass and size. Each class was associated with unique risks, APED history, and training identity. Not all APED users suffer from significant BID and there are unique profiles for those with elevated BID. Future research on male BID should account for this structure in order to better define relevant diagnostic categories and evaluate the clinical significance of BID.

1. Introduction

Investigations of gender-specific body image disturbance largely suggest that men experience and evaluate their bodies differently than women and experience different types of psychopathology as a result (Hildebrandt and Alfano, 2009; McCabe and Ricciardelli, 2004). Stereotypically female body image concerns (typified by a "drive for thinness") are implicated in the development and maintenance of eating disorders (Stice et al., 2008), where large but shrinking gender disparities exist (Hudson et al., 2007), and problematic behaviors are aimed at weight loss and a thin physique. Conversely, stereotypically male body image disturbance is anchored in a "drive for muscularity" (Bergeron and Tylka, 2007; Phillips and Diaz, 1997). The extreme consequences of this pursuit is found among men with muscle dysmorphia (MD), a subtype of body dysmorphic disorder (BDD) characterized by obsessionality and compulsivity directed toward achieving a lean and muscular physique (Pope et al., 1997). For instance, muscle dysmorphia is associated with anabolic–androgenic steroid (AAS) and associated drug use, eating to gain muscle mass or cut fat, and excessive weight lifting (Olivardia et al., 2000; Pope et al., 2005).

However, the case of body image in men may be more complex and heterogeneous than initially conceptualized as men do not pursue muscularity exclusively but they are additionally concerned with achieving leanness (Cafri et al., 2005; Mangweth et al., 2001). For instance, male haute couture models may seek extreme leanness, while film actors may aim for moderate lean muscularity, fitness models for greater musculature, and bodybuilders/weightlifters for excessive muscularity. Thus, while the ideal physiques of these groups of men may be characterized by drives for both leanness and muscularity, their ideal body image and types of behavior aimed at achieving this ideal may vary significantly, yielding unique body image phenotypes that pose certain diagnostic dilemmas (e.g., eating disorder vs. MD).

Men experience sociocultural pressures for both leanness and the development of defined musculature early in their development (Pope et al., 2001; Ricciardelli et al., 2007; Stanford and McCabe, 2005), and while the majority of men do not develop clinically significant body image disturbances, an increasing number of them are engaging in problematic behaviors including use of appearance and performance-enhancing drugs (APEDs) such as (AASs) (Hildebrandt et al., 2007; Kanayama et al., 2006). The pathological exten-

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sion of this pressure for lean muscularity has been termed MD (Pope et al., 1997). Though the classification and proposed criteria for MD are still debated (Chung, 2001), these criteria offer an appropriate foundation for examining the consequences of stereotypically male body image disturbance. Men suffering from MD are susceptible to increased psychopathology, including eating disorder symptomatology, sexual dysfunction, suicidality, and depression (Cafri et al., 2008; Leone et al., 2005; Mangweth et al., 2001; Olivardia et al., 2000). These men may spend hours obsessing about their physiques, exercising excessively, and are more likely to use APEDs such as AASs, prohormones such as androstenedione, human growth hormone (HGH), or illegal "cutting" agents like the thyroid medications Synthroid and Cytomel (Hildebrandt et al., 2006, 2007; Pope et al., 1997). The propensity to use APEDs, the choice of APEDs used, as well as the pattern of APED use may be influenced by the demands of a particular athletic identity such as bodybuilding (Goldfield et al., 2006; Hildebrandt et al., 2007; Mosely, 2008) as well as one's degree of body dissatisfaction and drive for muscularity. This heterogeneity potentially has diagnostic, clinical, and etiological significance. One such issue is whether MD serves as the pathological endpoint to a continuum of body image disturbance or whether there are multiple pathological endpoints related to different groups with functionally different clinical risks, associated psychopathology, and etiologies.

Consistent with the subgroup model of male body image disturbance, Hildebrandt et al. (2006) surveyed a community sample of male weightlifters and indentified five unique subgroups based on desired bodily changes and relevant patterns of extreme body controlling behavior. A group of respondents indicated that they were more concerned with decreasing fat and were more likely to use weight loss strategies, while others were more concerned with building muscle, and still others showed no abnormal body image concerns. A group with a desire for significant changes in both leanness and muscularity reported the most MD symptoms and highest rates of APED use. As such, different training identities may map onto different profiles of body image disturbance. In another study, Pickett et al. (2005) found that competitive bodybuilders and professional athletic trainers, while more satisfied in their overall appearance than athletically active controls, displayed higher levels of psychological investment in their physical appearance, and the bodybuilders tended to have a higher rate of disordered eating. Although weightlifting men may be at greater risk for developing MD symptomatology or even progressing to APED use, several studies have demonstrated that bodybuilding does not inevitably lead to such disturbances. For example, Pope et al. (1997) noted that many weightlifters they observed did not have symptoms of MD. In addition, Olivardia et al. (2000) observed increased psychopathology among bodybuilders with MD, but not among those who did not meet criteria for MD, while Kanayama and colleagues (2006) observed that weightlifters' pre-lifting confidence in their physical appearance, the breadth of their views of masculinity, and current muscle dysmorphia predicted APED use. Thus, even high risk or pathological variants of body image disturbance are relatively heterogeneous in these groups and are clouded by different identities and bodily ideals.

The most commonly cited behavior associated with body image disturbance in men is illegal APED use although a range of weight and appearance controlling strategies have been observed. The focus on APED use concerns the potential for abuse and dependence of these substances. For example, in a survey of 100 illicit (AAS) users (94% male), Copeland et al. (2000) found evidence for drug abuse or dependence in a full 78% of users. Another such study (Parkinson and Evans, 2006) surveyed 500 AAS users and observed several different "types" of users, whose pattern of APED use was directly related to their specific concerns (e.g. improvement of physical appearance vs. athletic performance). Using factor mixture modeling, a statistical approach that allows for simultaneous dimensional and categorical classification of participants, Hildebrandt et al. (2007) found four unique patterns of APED use that reflect different priorities (lean hypermuscularity, primarily leanness, primarily mass building, or a common nonspecific muscularity pattern). The 10% of the sample using heavy polypharmacy with drug use patterns reflecting both mass building and fat burning priorities were at the highest risk for side effects and future APED use.

In this present study, we analyzed data from an ongoing Internet survey of APED users (Hildebrandt et al., 2006, 2007) and sought to determine if there were different types of body image disturbance among APED users or if a simpler dimensional severity model anchored in the lean muscularity ideal often cited in the MD literature best reflects the body image disturbance experienced by these men. Such clarification will help sort out the clinical and possibly etiological role of body image disturbance in emerging psychiatric diagnoses such as MD or pre-existing diagnoses such as eating disorders.

2. Methods

2.1. Data collection

A total of 1000 male APED users were recruited from Internet discussion boards between November 2003 and November 2007. Links posted to both moderated, unrestricted public message boards and selected membership boards devoted to performance-enhancing drugs, body building, power lifting, and physical fitness directed interested respondents to a Rutgers University Web server where the data collection instrument resides. The instrument totaled 445 items and took an average of 20–30 min to complete. The measure may be viewed at http://websurvey.rutgers.edu/steroids/ and detailed information about its creation and content can be found elsewhere (Hildebrandt et al., 2006, 2007). To ensure data quality, a number of checks were in place. The initial sample contained 1493 subject, 1207 of these participants were APED users. Of the APED users 207 were eliminated due to duplicate IP addresses (78 participants), bogus or conflicting item endorsement (12 participants), or were female (117 participants). Thus, the final sample consisted of 1000 unique APED using men. These validity and reliability checks provide a conservative approach to data collection and were used to reduce the sampling bias possible via internet data collection.

2.2. Participants

The race and ethnicity of the sample indicated that most identified themselves as White/Caucasian (89.0%, $n = 890$), Asian/Pacific Islander 6.0% ($n = 60$), Black/African-American (3.2%, $n = 32$), and Hispanic/Latino (2.8%, $n = 28$). A total of 86.0% of participants were North American. Participants were $M = 28.32$ ($SD = 8.54$: range = 18–77) years old with a self-reported body mass index (BMI) of $M = 29.54$ ($SD = 4.87$) and a standardized measure of self-reported body mass corrected for body fat percentage, fat free mass index (FFMI), of $M = 27.89$ ($SD = 5.12$). The majority of participants identified as heterosexual (94.8%, $n = 948$), with few identifying as homosexual (3.6%, $n = 36$) or bisexual (1.6%, $n = 16$).

2.3. Measures

Muscle Dysmorphic Disorder Inventory (MDDI): The MDDI (Hildebrandt et al., 2004), is a 13-item measure of muscle dysmophia (MD) symptoms that utilizes a 5-point Likert scale from 0 = *never* to 4 = *always*. The three subscales are designed to map onto the