Gender Norms, Activity, and Eating: Examining the Factors at Play in Men's Experiences

of Disordered Eating and Body Image

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Abstract

Though men make up a significant portion of those with eating disorders and commonly face issues with disordered eating in body image, research particularly regarding men's experiences of these issues has been largely unexplored in prior research as opposed to women's experiences. Our research aims to address this gap in literature with particular attention to aspects such as gender role identification, exercise habits, body image issues, and life satisfaction. We utilize a self-report questionnaire to determine what factors are at play in men's experiences of disordered eating and body issues as well as whether or not masculinity plays a crucial role in said experiences. We also expand prior literature using a Self-Discrepancy measure to better understand disconnections in body image. Analyses showed significant, complex relationships between masculinity, life satisfaction, and various measures of disordered eating, body image, and exercise, in addition to the mediation of the relationship between self-discrepancy and life satisfaction by masculinity and intolerance of appearance. We address these results through the scope of gender norm, beauty standards, and expectations for men as well as broader patterns in disordered eating/body image issues.

Keywords: men, disordered eating, body image, life satisfaction, masculinity, self-discrepancy.

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Although some estimates suggest that men constitute up to a quarter of eating disorder cases (Hudson et al., 2007), research rarely focuses on men's experiences of eating disorders and problematic body image. Though these gaps in research have diminished in recent decades, internalizing disorders (including eating disorders and body image disorders) remain feminized both societally and clinically (Austen & Griffiths, 2019; Gallagher et al., 2021; Currin et al., 2007). For instance, body image issues are often painted as more emotionally driven and "feminine," and are thus commonly assumed to be a more prominent issue for women than for men. Despite these misconceptions, prevalence rates of body dysmorphic disorder tend to be similar across gender lines, as nearly half of American men cite experiencing some sort of bodily and/or appearance dissatisfaction (Phillips & Castle, 2001). Unfortunately, research on disordered eating and body image in men continues to lag behind.

Within the research that has focused on men's experiences, variables related to men's specific challenges have emerged, such as attitudes toward and adherence to masculine norms, muscularity goals, and exercise habits. Individuals with disordered eating and/or body image issues also tend to endorse lower levels of subjective well-being (Claydon et al., 2020). This likely reflects a reciprocal relationship, in which disordered eating and problematic body image lower one's life satisfaction in ways that increase stress and the difficult emotions that promote disordered eating. The purpose of this study is to examine interrelationships between subjective well-being, adherence to masculinity, disordered eating habits, excessive exercise, and body image issues. Additionally, this study seeks to explore if self-discrepancy in body image (i.e.,

experiencing one's current body image as being far from what one views as an ideal body image)

is related to these variables as well.

Disordered Eating, Gender Identity, and Gender Roles

Eating disorders are defined as mental health conditions involving recurrent patterns of

problematic eating and/or dieting behaviors, which can severely impact a person's health

(Hudson et al., 2007). Eating disorders have a lifetime prevalence ranging from 0.6% - 4.5% in

the United States. Individuals may also have challenges associated with eating that do not qualify

as an eating disorder. The term *disordered eating* encompasses feeding and eating behaviors that

do not meet the criteria for a major eating disorder, but still represent problematic habits or

attitudes toward one's own diet, weight, or shape (Nurkkala et al., 2016).

Habits associated with disordered eating may include various compensatory behaviors

such as excessive exercising, caloric restriction, and cutting essential food groups in order to

attain a certain weight or figure. Disordered eating can have negative impacts on one's physical

and mental health and can put people at risk for developing a true eating disorder over time

(Nurkkala et al., 2016). Rates of disordered eating may be higher than the rates of diagnosed

eating disorders. For instance, 0.3-2.0% of men are estimated to have experienced an eating

disorder at any given time, but Nurkkala and colleagues (2016) indicated that around 6.9% of

men experienced symptoms of disordered eating. This discrepancy provides important

implications for treatment, as those who experience "less severe" symptomatology may be less

likely to reach out for help and/or receive treatment despite risk for poor health outcomes

(Nurkkala et al., 2016).

Within the realm of disordered eating, assigned sex and/or gender identification may play

a role in symptom development, diagnosis, and symptom course. As a whole, men are

significantly less likely to be diagnosed with an eating disorder (Hudson et al., 2007; Currin et

al., 2007), and the most common diagnosis for men is binge-eating disorder (Hudson et al.,

2007). As with any research pertaining to gender, it is important when making claims about

gender differences in disordered eating to differentiate assigned, biological sex (male, female,

and intersex), gender identity (man, woman, and nonbinary), and gender role identification

(masculinity, femininity, and androgyny), as the impacts of one may not inherently translate to

the others. For example, in research on *women's* disordered eating, those identifying with a

masculine gender role (i.e., masculine norms) were less likely to display symptoms associated

with anorexia and bulimia relative to those endorsing a feminine gender role (a result which has

been produced in both clinical and non-clinical samples; Murnen & Smolak, 1997). Thus, it is

possible that gender role identification may be as important or even more important than gender

identity or assigned sex when considering risk for disordered eating and eating disorders.

Aiming to better understand the relationship between gender role identification and

disordered eating, Murnen and Smolak (1997) conducted a meta-analysis of 22 studies exploring

links between eating problems and masculinity/femininity gender role identification. Research

studies included in the analysis used scales such as the Bem Sex-Role Inventory (BSRI; Bem,

1981) and the Personal Attributes Questionnaire (PAQ; Spence & Helmreich, 1978) to assess

adherence to masculinity and/or femininity. "Eating problems" were assessed in two ways: 1) a

diagnosis of an eating disorder (such as anorexia or bulimia nervosa) and 2) by participants'

responses to scales, such as the Eating Disorders Inventory (EDI; Garner, Olmstead, & Polivy,

1983) or the Eating Attitudes Test (EAT; Garner et al., 1982), which measure disordered eating

symptoms. Compared to non-disordered groups, eating-disordered participants rated themselves

higher in femininity and lower in masculinity. Variance in femininity scores were largely

universal across clinical and non-clinical samples (i.e., those who were diagnosed with an eating

disorder versus those who only responded to disordered eating scales); however, variance in

masculinity in non-clinical samples were small. Ultimately, the study concluded that symptoms

of disordered eating are significantly correlated with higher feminine and lower masculine

gender role identity. A major limitation of this study represents a larger, commonly occurring

issue in eating disorder research[1]: the study focused exclusively on women's experiences, with

none of the 22 analyzed studies including men in their sample. Thus, it is unclear as to whether

the results of this meta-analysis can be generalized across all gender identities. As such, it is also

unknown whether gender identity presents any major differences in the relationship between

gender role identification and disordered eating, as gender identity was not a variable that was

considered in this study.

The Role of Masculine Norms in Disordered Eating and Problematic Body Image

The literature is mixed regarding how disordered eating manifests across gender

identities, with some studies highlighting similarities and some suggesting differences. For

instance, Button and colleagues (2008) determined that men by and large experience similar

symptoms and issues related to eating disorders as women. Their research subsequently seems to

support the practice of generalizing eating disorder criteria, based largely on women's

experiences, to men. Perko and colleagues (2019) conveyed comparable conclusions with regard

to men's and women's symptom clusters in eating disorders, finding that symptom patterns tend

to be more similar across gender lines than they are different. It should be noted, however, that

this study did not include scales that measure attitudes toward muscularity and obesity- two

measurements that may supply particularly interesting results for men- which could cast severe

limitations on the generalization of these results. This aligns with current diagnostic models for

mental health emphasis on observable behaviors that are easy to classify (and de-emphasis on motivational and dynamic factors associated with conditions).

Other studies suggest that there may be differences between men and women with regard to eating symptoms and body image issues. Several studies have indicated that there *could* be unique variables at play in men's eating disorders, especially with regard to motivational factors. One such variable is masculinity. Tied to men and manhood, masculinity can be broadly defined as the sociocultural expectations that are associated with/placed upon men in any given society. Though they can vary fluidly across contexts, time periods, and locations, cultures tend to have a limited selection of traits commonly associated with masculinity. Connell (1987) refers to these characteristics as *hegemonic norms* for masculinity, encompassing the traits that are prized and produce social dominance among men.

Hegemonic norms often prioritize physical strength, emotional restriction, avoidance of femininity, individualism, competition, assertiveness/aggression, and heterosexism, among other characteristics (Connell, 1987). These attributes are often referred to as "traditional masculinity," as opposed to more "progressive" or modern views on what constitutes the masculine ideal. It is important to note that traits painted as masculine are *not* inherently negative; rather, strict, unwavering adherence to these norms (especially those such as aggression, dominance, and/or anti-femininity) tends to result in a sort of "toxicity" (Mahalik et al., 2003; Smith et al., 2015), to both the individual and those around them, such as when chivalry morphs into sexism or a reinforcement of the patriarchy.

As masculine norms tend to emphasize individualism, strength, and emotional restriction, men who attempt to strictly embody masculine norms may struggle with their own mental health. For instance, men are significantly more likely to take their own lives as compared to women,

tend to hold negative attitudes toward mental health treatment, and are less likely to reach out to

mental health services when needed (Austen & Griffiths, 2019; Sagar-Ouriaghli et al., 2019).

Men are particularly less likely to seek help for internalizing disorders, such as depression,

anxiety, *and eating disorders*, as these disorders revolve around emotions, attitudes, and habits

that are painted as being more "feminine."

Concerns about masculinity can increase risk for disordered behavior among men. For

example, heightened conformity to masculine norms- those like heterosexism, sexual drive,

emotional restriction- have been shown to correlate with increased rates of issues like drive for

muscularity and body dysmorphia (Blashill et al., 2020; Le et al., 2022). Masculine beauty norms

often emphasize a muscular and lean physique. Efforts to achieve these norms may be pertinent

for those who may feel otherwise alienated from masculinity due to, for instance, gendered racial

stereotypes or gender nonconformity (Le et al., 2022; Wiseman & Moradi, 2010). Men's

adherence to masculine norms also predicts heightened muscle dissatisfaction, muscle-oriented

disordered eating, and a lack of thinness-oriented goals common in feminine norms (Griffiths &

Murray, 2015; Quiniones & Oster, 2019).

As masculine norms also tend to focalize tenants of physical strength, sexual prowess,

and conventional attractiveness, negative or strictly held norms may have noteworthy impacts on

body image. Specifically, certain aspects of "traditional" masculine norms (i.e., heterosexism,

sexual drive, emotional restriction, etc.) predict heightened rates of muscularity-related body

dysmorphia, as opposed to the thinness emphasized in feminine patterns (Blashill et al., 2020; Le

et al., 2022; Griffiths & Murray, 2015; Quiniones & Oster, 2019). Excessive emphasis on

masculinity may correlate with more difficult recoveries and diagnoses, as masculine stigmas

placed on eating disorders, alongside masculine theming of violence and aggression, could hinder a person's willingness to seek help (Strobel, 2022; Austen & Griffiths, 2019).

These concerns with body image may also have unique symptom patterns within men's experiences. Intense dissatisfaction with one's body- otherwise known as body dysmorphic disorder (BDD)- has long been consider a factor that often co-occurs with eating disorders (Fairburn & Cooper, 1993; Forbush et al., 2013; Stice & Telch, 2000) and is a common symptom of disordered eating across all genders. However, men may be particularly at risk for *muscular dysmorphia*, a subtype of BDD involving an obsessive preoccupation with one's muscularity. This pattern was shown by Pope and colleagues (1997) while studying men who weightlift. Several studies have shown that men report struggling with muscular-related body dissatisfaction and muscularity-oriented disordered eating (Griffiths & Murray, 2015; Mangweth-Matzek et al., 2016). This is especially true when coupled with high adherence to masculine norms, as stated previously, presenting a unique interplay of variables within men's experiences (Blashill et al., 2020; Wei et al., 2021).

Several specific studies have explored the role of masculinity and masculine norm identification with disordered eating, body image, and self-evaluation. For example, Holmqvist Gattario and colleagues (2015) examined the responses of men from four different Western countries. Respondents completed the Conformity to Masculine Norms Inventory (CMNI-46; Mahalik et al., 2003) in order to map out their perceived masculinity, as well as the Drive for Muscularity Scale (DMS; McCreary & Sasse, 2000), the Drive for Leanness Scale (DLS; Smolak & Murnen, 2008), and the 13-item fitness orientation subscale of the Multidimensional Body Self-Relations Questionnaire (Brown, Cash, & Mikulka, 1990) to assess body-image. Ultimately, body image and conformity to masculine norms were correlated; men who deemed

themselves to be more masculine scored higher on a drive for muscularity, leanness, and fitness

across all nationalities[2].

Masculinity and Compensation Behaviors

With regard to eating disorder symptomatology, *compensation behaviors* are any number

of habits that an individual uses to try to control their weight/figure by "compensating" for

eating, especially when eating episodes are deemed excessive (Binford & le Grange, 2005).

These compensatory behaviors can be seen in eating disorders and in body image issues, though

the intensity/severity may vary (Nurkkala et al., 2016). Compensation behaviors can take the

form of purging behaviors, such as inducing vomiting, utilizing laxatives, or excessive exercise.

They may also be restrictive, such as severely reducing one's caloric intake or cutting out

essential nutrients/food groups from one's diet (Binford & le Grange, 2005). Excessive exercise

intended to burn large numbers of calories is also a common example.

In more masculine patterns of disordered eating, excessive exercise may be a particularly

pertinent compensation behavior. In general, symptoms of eating disorders tend to correlate with

exercise dependence, i.e., engaging in excessive, unhealthy, or otherwise problematic exercise

behaviors, for both women *and men* (Kun et al., 2022; Levit et al., 2018). With regard to men's

experiences, Kun and colleagues (2022) found that, though symptoms of disordered eating

tended to be lower in men than in women, the relationship between emotional dysregulation,

psychological distress, and symptoms of exercise addiction was *notably* significant in men. Other

studies also report positive correlations between disordered eating and obsessive exercise in men

(Mangweth-Matzek et al., 2016; Tod & Edwards, 2015), as well as emotional dysregulation's

role in masculine norms (Mahalik et. al, 2003; Snell, 1989). Such findings suggest that

disordered eating behaviors can manifest in conjunction with masculinity.

It is clear that masculinity, body image, and compensation behaviors have unique and interactive impacts on men's experiences of disordered eating. However, there may be further interplay between all three elements. For instance, Whitaker and colleagues (2019) examined online accounts of young men's perceptions of their own body image and topics of men's body image in general collected through a message board. The study utilized two qualitative data sets. First, a sample of personal accounts from young men was examined and coded. Second, a sample of other men's *responses* (i.e., comments on the message boards in response to the personal accounts collected in the first part of the study) was analyzed. Through these message board interactions, it was clear that the young men included in the study frequently experienced body-image issues- both striving for leanness and muscularity, in line with other research on the topic (Vartanian, 2012). Several accounts described a social pressure to look a certain way, to have the "perfect" masculine body. They also described feeling shame and dissatisfaction when unable to meet these standards. Additionally, participants relayed the idea that, in line with masculine norms for emotional strength and restriction, they felt as though they cannot talk about their hardships with body image with others. One participant stated that hegemonic masculinity created the "perfect storm for bottled-up anxiety, poor self-image and body dysphoria" (Whitaker et al., 2019, p. 640).

Whitaker and colleagues (2019) generated a second sample of qualitative responses by recording statements made by men who read online posts of men describing challenges with body image and made comments on these posts. We refer to this sample as the "response data set." The response data set provided important insights into social perceptions surrounding young men's body dissatisfaction. These responses attempted to normalize or dismiss body-image concerns as a "fact" of adolescence, a phase that just needs to be worked through, rather

than a pressing concern. Additionally, many respondents attempted to place the blame for these

body image issues onto the young men themselves, citing some sort of inadequacy and, at times,

even encouraging the use of compensatory behaviors such as intense exercise as a means to

address feelings of body dissatisfaction. As such, the interaction between the original posts and

the following responses provides further support for connections between masculinity,

compensation, and body image. In the face of significant body-image issues that could grow to

negatively impact affect and self-image, young boys and men are essentially told to "man up"

and avoid discussion of these problems, even from men who report experiencing similar issues in

their youth, and to turn to compensation habits to address concerns rather than conversations.

The varied reactions of individuals, as evidenced by the original statements of the men who

posted and the responses of men who read the posts, suggest that men may vary considerably in

how they think about body image, masculinity, and cultural norms. Thus, rather than stemming

solely from an objective failure to achieve a norm, difficulties and distress related to body image

may occur as a function of subjective discrepancy between a man's perception of an "ideal"

body image and his view of his actual body image.

Self-Discrepancy as a Predictor Variable

In understanding the relationships between disordered eating, body image, compensatory

behaviors, and well-being among men, it is possible that self-discrepancy may play an important

role. According to Self-Discrepancy Theory (SDT; Higgins, 1983), peoples' perceptions of

themselves are built upon three main aspects of the self: the *actual* self, who we perceive

ourselves to be currently, the *ideal* self, who we want or aspire to be, and the *ought* self, who we

feel we have an obligation to be (Vartanian, 2012). These perceptions can occur from the

viewpoint of the individual ("own") or from the viewpoint of family, friends, society, etc.

("others"). For example, one person might ideally want to become a famous artist (ideal/own); another may feel as though their family expects them to be a doctor (ought/other). Within this theoretical framework, feelings of *self-discrepancy* occur when an individual feels that there is some sort of disconnect between who they *are* and who they *want* to be or feel that they *should* be (Vartanian, 2012).

Self-Discrepancy Theory is both a theory about the self-concept and a theory of motivation. Specifically, when individuals experience a disconnect between who they are and who they want or feel they are expected to be, they are motivated to reduce this sense of discrepancy. For example, individuals who experience a discrepancy between their actual and ideal selves will generally strive to close this gap. This is neither inherently problematic nor beneficial. Instead, the impacts on the individual will vary as a function of how "realistic" the ideal self-standards are and as a function of how the individual manages the discrepancy. When individuals hold more realistic or achievable ideal self-standards, they are more likely to experience less distress and to manage the situation in a more realistic fashion. However, unrealistic goals and ideals are often linked with negative self-image and affect, leading to either dejection or agitation based on the source of the discrepancy (Vartanian, 2012). When ideal self-expectations (or "should" self-expectations [i.e., what the person believes others think they should be]) are extreme, unrealistic, or notably difficult to achieve, individuals may cope by employing excessive compensation behaviors or by giving up and experiencing a decreased sense of well-being.

With regard to body image, self-discrepancy is often used as a tool to better understand an individual's perceptions of themselves and their body. The research in this area tends to focus on the disconnect between one's perception of their actual body and their ideal body (Vartanian,

2012). Self-perception, as opposed to the perception of others, is key in research involving body image and self-discrepancy (Veale et al., 2003); this provides important implications for disordered eating research as well, as body dysmorphia (which relies heavily on self-perception and reflecting on one's ideals) tends to go hand in hand with eating disorders (Fairburn & Cooper, 1993; Forbush et al., 2013; Stice & Telch, 2000). At this time, there is little research exploring discrepancies between the perception of one's current body image and perceptions of what one believes others think one's body should be.

Due to the societal power of gender role expectations and gendered beauty standards, self-discrepancy and body image are also likely linked to masculinity and compensatory behaviors. For instance, Vartanian (2012) highlights important gender differences in experiences of body image-based self-discrepancy. While women tend to most often state that their ideal self is thinner than their actual self, men may commonly respond on both ends of the spectrum, with some men wishing that they were thinner than they are and others idealizing a larger (often more muscular) figure (Vartanian, 2012). Importantly, for men, both sides of self-discrepancy are linked to worsened affect and negative self-image (Vartanian, 2012), indicating that masculine norms and beauty standards may result in unique experiences of body dissatisfaction. Consistent with predictions made by Murnen and Smolak (1997), it seems likely that one's general perception of their own femininity or masculinity is not inherently the most important predictor of body dissatisfaction or disordered eating; rather, it could be the perceived discrepancy between who the individual is and who they would ideally like to be (often based on internalized gendered beauty standards) that correlates most strongly with negative body image and eating disorder symptoms (Veale et al., 2003).

Several studies link increased body dissatisfaction and self-discrepancy with symptoms of eating disorders. For example, in examining college-aged women, Synder (1997) found that discrepancies between one's perceived self (actual) and the person who they feel they want to be or should be (ideal/ought) had a small but noteworthy relationship with disordered eating symptoms. Snyder's research suggests a significant connection between disordered eating and body dissatisfaction/self-discrepancy. Lantz Lesser and colleagues (2020) echoed this conclusion in their research involving individuals diagnosed with binge-eating disorder. Self-discrepancy-particularly within one's own perceptions, rather than the perceptions of others- also has ties with body dysmorphic disorder (Veale et al., 2003), which tends to commonly occur comorbidly with various eating disorders (Ruffolo et al., 2006).

Present Study

Despite the numerous advances made in research on men's eating disorders, gaps and limitations remain. For instance, one of the major limitations present throughout the literature was that the tools used to measure and diagnose eating disorders are often biased toward women's experiences (Gleaves et al., 2014; Gallagher et al., 2021; Sonneville & Lipson, 2018). This bias may lower validity when scales are tested on men, as well as men being less likely to receive a diagnosis even when presenting the same symptoms as women (Gleaves et al., 2014; Currin et al., 2007). While body image has been studied more often (relative to disordered eating) in male populations, additional research in this domain is also necessary (as disordered eating may, at times, serve a compensatory function that stems from body image issues). Specifically, while body-focused self-discrepancy research is common in samples of women, this method has rarely been used with men.

Given the existing gaps in eating disorder research, along with the trends present in research that *does* involve men, this study aimed to better examine the factors that may be particularly prevalent in men's disordered eating. Our research assessed differences between the levels of behaviors associated with muscular dysmorphia, exercise addiction, and disordered eating symptoms in men who were masculine and in men who were feminine, as well as how self-image discrepancies and life satisfaction may play a role in these issues. As such, the study compared the experiences of those who conformed highly to gender roles to those who did not. We ultimately predicted that, though men and masculinity may correlate with lowered overall rates of disordered eating, masculinity would correlate with heightened rates of muscularity- and exercise-oriented symptomatology. Additionally, akin to predictions made by Murnen and Smolak, we expected that inconsistencies in one's ideal/expected self and who they perceive themselves to be would be a major mediating variable between masculinity and disordered eating behaviors. We made the following hypotheses:

1) Exercise dependence, muscle dysmorphic symptoms, and disordered eating symptoms would all be inversely correlated with subjective well-being.

2) Masculine gender role identification would be more strongly associated with exercise dependence and muscle dysmorphic symptoms.

3) Feminine gender role identification would show a larger association with disordered eating symptoms.

4) Muscle dysmorphic symptoms and disordered eating symptoms would be positively associated with should-self discrepancy.

5) Disordered eating symptoms would be positively associated with ideal-self discrepancy.

Methods

Participants

Ninety-nine valid participants were recruited from the internet crowdsourcing website Prolific (https://www.prolific.co/). Prolific is an online program that allows individuals, researchers, companies, etc., to pay participants to complete small research studies. All participants self-identified as men. Their ages ranged from 18 to 74 ($M = 35.55$; $SD = 12.96$). The majority of participants identified as White ($N = 69$; 69.7%); 11 (11.1%) identified as Asian, 9 (9.1%) identified as Black or African American, and 9 (9.1%) identified as Hispanic, with 1 (1.0%) participant identifying as another, unlisted ethnicity. Additionally, 79 (79.8%) participants reported that they were heterosexual, 10 (10.1%) stated that they were bi- or pansexual, and 10 (10.1%) expressed that they were homosexual.

Materials

This study utilized a Qualtrics survey that, in addition to collecting the aforementioned demographic information, contained a number of scales that measured a participants' perceived sense of their own masculinity/femininity and the display of characteristics associated with exercise addiction, muscle dysmorphia, disordered eating, and life satisfaction. The following scales were included in the survey: a shortened form of the Bem Sex-Role Inventory (BSRI-30; Bem, 1981), the Muscle Dysmorphic Disorder Inventory (MDDI; Hildebrandt et al., 2004), the Exercise Dependence Scale (EDS-21; Hausenblas & Symons Downs, 2002), the Eating Pathology Symptoms Inventory (EPSI; Forbush et al., 2013) and the Schwartz Outcome Scale (SOS-10; Blais et al., 1999), respectively. Additionally, the survey featured a modified form of the Selves Questionnaire (Higgins, Klein, & Strauman, 1985) that measured discrepancies between a person's perception of their actual body, their ideal body, and the body they believe

that prospective romantic partners would find attractive. Each of these scales had historic validity and had been widely used in research, making them optimal for this study.

Bem Sex-Role Inventory

The BSRI-30 is a Likert-type scale that asks participants to rate themselves on a scale of 1 to 7 (1 being "never true" and 7 being "always true") for 10 items that are gender-typed as masculine, 10 feminine, and 10 neutral. These gender-typed items are characteristics, habits, etc. that are often socially associated with one gender more than the other (or neither/both, in the case of neutral items). The scale includes things like "dominant" and "independent" on the masculine scale, "understanding" and "gentle" on the feminine scale, and "conscientiousness" and "secretive" on the neutral scale. Scores can range from 1-70 for each subscale (masculine, feminine, neutral). Scores closer to 1 indicate low adherence to the gender-norm category, whereas scores closer to 70 indicate high adherence. For example, if an individual were to score themselves highly on masculine items, but low on feminine items, they would be determined to be quite masculine. On the other hand, if they were to score highly (or lowly) in both the masculine and feminine categories, they would be determined as being very *androgynous*, being both masculine *and* feminine (or, in the case of low scores, neither). Cronbach's alpha values for the short form scale ranged from .78-.87 across the femininity and masculinity scales. As opposed to the original 60-point scale, the revised 30-item scale is both less exhaustive and more statistically sound (Campbell, Gillaspy, & Thompson, 1997).

Muscle Dysmorphic Disorder Inventory

The MDDI features 13 questions that work to assess an individual's drive for "size" (increased muscularity), dissatisfaction with one's appearance, and functional impairment with regard to their own muscularity. Participants respond to each item on the scale with an individual

score ranging from 1-5, 1 being "never" applicable and 5 being "always" applicable. With a

potential score range of 1 to 65, scores closer to 65 on the MDDI imply greater symptom

severity. Each subscale (drive for size, appearance intolerance, and functional impairment)

would see potential scores ranging from 1-25, 1-20, and 1-20, respectively, where higher scores

indicate subscale-specific symptom intensity. Alpha analyses indicated strong internal validity

for total scores (α=0.81) as well as the drive for size (α=0.85), appearance intolerance (α=0.77),

and functional impairment (α=0.80) subscales. This scale was particularly useful in drawing

correlations between muscularity, masculinity, and broad-spanning eating disorder symptoms,

especially as it was created specifically with men in mind.

Exercise Dependence Scale

The EDS-21, a slightly shorter form of the original 29-item scale, offers a

comprehensive view of exercise dependence. This scale scores items on a 5-point scale, with one

being "never true" and 5 being "always true," asking questions like "I continually increase my

exercise intensity to achieve the desired effects/benefits" and "I exercise despite persistent

physical problems." The EDS also offers subscales of tolerance, withdrawal, intention effect,

lack of control, time, reductions in other activities, and continuance, in-line with existing criteria

for substance addiction/dependence. The 21 total items are divided into these subscales with

three questions for each scale, and, based on a person's total score, can place individuals into

classes of at-risk, non-dependent symptomatic, and non-dependent asymptomatic for exercise

dependence. Total scores for the EDS showed strong internal validity at an alpha level of .93.

Eating Pathology Symptoms Inventory

The EPSI is a more recent (i.e., 2013) eating disorder scale that assesses the *pathology* of

symptoms involved in eating disorders rather than attempting to provide a specific diagnosis. As

our study was *not* looking to diagnose participants with a disorder, but instead aimed to observe the presence of disordered eating *symptoms*, this scale was particularly advantageous for this research. Additionally, unlike other scales that assess eating disorder symptoms, the EPSI also seems to have been constructed with men's experiences in mind and does not generalize its items based only on the symptom patterns of women (as, for example, the frequently used Eating Disorder Diagnostic Scale does).

In the EPSI, participants are asked to rate themselves and their experiences on a 5-point scale ranging from "never" (0) to "very often" (4). With 45 total items, scores can range from 0-180, where higher scores indicate greater symptom frequency/severity. Alpha values were analyzed using multiple different groups of participants, and median values across subscales (representing a total alpha level) ranged from .84-.89. Across individual subscales, average alphas were strong: α(*Body Dissatisfaction*) = .88; α(*Binge Eating*) = .88; α(*Cognitive Restraint*) = .80; α(*Purging*) = .76; α(*Restricting*) = .84; α(*Excessive Exercise*) = .89; α(*Negative Attitudes Toward Obesity*) = .90; α(*Muscle Building*) = .80. This scale does include subscales for both behavioral (actions, activities, etc.) and cognitive (thoughts, attitudes, etc.) symptom clusters, such as binge eating, purging, restriction, excessive exercise, and muscle-building, as opposed to body dissatisfaction, cognitive restraint, and negative attitudes toward obesity, respectively. Given the fact that there tend to be considerable gendered trends in these categories, with men more often embodying behavioral patterns (Gallagher et al., 2021), these subcategories were important to our planned hypothesis testing.

Schwartz Outcome Scale

The SOS-10 assesses subjective well-being (Blais et al., 1999). It is composed of 10 items that respondents rate on a 7-point Likert scale ranging from 0 (never) to 6 (all the time or

nearly all the time). A total score is calculated by summing responses from each item, resulting

in a score ranging from 0-60. Higher scores are indicative of better overall functioning and more

positive perceptions of quality of life. Cronbach's alpha showed strong internal consistency

between items (α = .95). Factor analytic investigations of the scale have supported that items

load on a single factor (Blais et al., 1999) and SOS-10 scores have been consistently linked to

quality-of-life outcomes in young adult samples (e.g., Haggerty, Blake, & Siefert, 2010).

Self-Discrepancy Assessment

The original Selves Questionnaire had participants write ten adjectives that described

their *actual* selves (who they currently are), their *ideal* selves (what they view as the best version

of themselves) and their *ought* selves (who they feel they should or are supposed to be). Higgins

had expert raters examine the word lists and code for degree of consistency vs. discrepancy. For

example, if a respondent listed the words "warm and friendly" on their actual selves list and

"friendly" on their ideal-self list, this would be coded as high consistency (i.e., a match). If they

wrote "poor" on their current-self list, and "rich" on their ideal-self list, this would be coded as

high discrepancy (i.e., a mismatch). Based on Higgins' (1983) Self Discrepancy Theory, scores

of this scale were determined by both *matches* (words that matched or were synonymous with

one another, denoted by a positive one) and *mismatches* (words that were direct opposites or

antonyms, denoted by a negative one). Scores on this self-perception scale could therefore range

from -10 to +10. The alpha level for this original measure was strong, α = .80.

The present study utilized a modified version of the selves questionnaire approach.

Specifically, it employed a method based on the Modified Selves-Discrepancy Measure- Online

(MSDM-O) that has been validated for online usage (Siefert, 2019). Like the original Selves

Questionnaire, it contained assessments for both ideal self-discrepancy and should self-discrepancy.

In our modified approach, participants were given the following prompt that asked them to type in five words that describe their ideal self:

> "In the spaces below list five attributes that describe the IDEAL body type you would like to have. You can list single words (e.g., bulky; tall) or brief phrases (e.g., long hair; strong legs). In other words, if you could have any type of body, what words would describe the body you see as ideal. You may or may not possess these characteristics."

Next, participants were asked to provide five characteristics that described what they believe women would deem to be the most *ideal body* (i.e., what the participant believes potential partners would find the most attractive):

> "In the spaces below, list five physical characteristics that describe what you think makes a man's body attractive to women. In other words, physical characteristics women believe men SHOULD possess."

After participants have provided their chosen characteristics, Qualtrics piped their text from the prior sections into Likert-style questions in which respondents rated how well each word described their current perception of their body. Participants were first given the five words that they used to describe their own sense of what their ideal body would look like. For example, if a respondent wrote the word "strong" for their ideal body image, they would then rate the word "strong" on a scale of 1 to 6, with one being "the descriptor is extremely like my current body" and six being "the descriptor is extremely unlike my current body." These scores were summed to produce a total "Ideal Body Discrepancy" score. Higher scores indicated that the person viewed their body as very far from what they considered ideal, while lower scores indicated a higher degree of overlap (i.e., congruence) between how their body currently was and what they viewed as ideal.

Participants were then presented with the words they provided to describe what they believe women want in a man's body, assessing their perception of a "should" self. They also rated each of these words using the same scale as described above. These scores were summed to create a total "Should Body Discrepancy" score. Again, higher scores indicate greater discrepancy, and lower scores indicate greater congruence. A final, Total Self Discrepancy score was also created, summing responses from both the Should- and Ideal-Discrepancy scales to describe the general sense of incongruence participants felt between their current body and what they felt internally or externally pressured to look like.

Procedure

After signing an informed consent form (Appendix A), participants first input their gender identity, with options of "man," "woman," "non-binary/other gender," and "prefer not to say." If they did not select "man," they were directed to the end of the survey and were not able to complete the questionnaire. This ensured that only those who self-select "man" as their gender identity were able to move through the survey. Participants then filled out the demographic section of the survey, inputting their age, racial and ethnic identities, and sexual orientation. Once this section was complete, participants completed each respective scale in succession.

The five scales were completed in random order- meaning that, for instance, some participants completed the BSRI first, while others completed the EDS first- to counterbalance the study and avoid issues with order effects. This process of randomly reorganizing the scale order was an important step in preventing each scale from influencing the others, due to both the content of the scales and the presence of a sort of social desirability bias. For example, if a man that judged himself to be very masculine completed the BSRI *first*, then the EPSI, he may have been inclined to misrepresent his true experiences of eating disorder symptoms to avoid

appearing "weak" or "feminine," Conversely, if the same man completed the *EPSI* first, being

fully honest in his responses, then the BSRI, he may have *overstated* his adherence to

masculinity in order to compensate for a perceived violation of gender norms. As such, there was

no one order of scales that was optimal and would entirely dismiss order effects as confounds,

and a randomized order was the best way to circumvent this issue.

Following the completion of each of the five major scales (the BSRI-30, the MDDI, the

EDS-21, the SOS-10, and the EPSI) participants completed the two Selves Questionnaires.

Participants were asked to provide five terms that describe their ideal self and five terms that

described what they believed a potential romantic partner would describe as ideally attractive.

These terms were then displayed as items on a matrix table, and participants were prompted to

rate how accurately they felt each of the characteristics described their *current* body or figure.

After completing the survey, participants were provided a debriefing form that contained

references for counseling and eating disorder-related assistance. They were then thanked for their

participation and were paid $2.25 for their work. The survey took about 10-15 minutes to

complete.

Results

Descriptive Statistics

Prior to conducting hypothesis tests, we first examined the distribution of data for our

scales. Table 2 contains the means, standard deviations, alpha values, and ranges for the various

scales. Of note, alpha values were generally above .70, with most above .80. The Cognitive

Restraint subscale produced an alpha of .66; however, this is likely driven by the fact that the

scale contains only three items (which can artificially lower alpha values). Table 3 contains

correlations among the major study scales.

Of note, we explored associations between the various subscales of the EPSI, the EDS, and the MDDI to determine if using the total score made sense for analyses. The subscale scores of the EDS were consistently positively associated with large effects (r values ranged from .38 to .69, with a mean of .53). This generally supported using the full scale. In contrast, associations between the EPSI subscales were small, ranging from .10 to .38 (with a mean of .29). Thus, using the total score may be misleading in many cases. Similarly, the three subscales of the MDDI were largely independent with associations ranging from .01 to .20 (with a mean of .08).

Hypothesis 1

The first hypothesis for the study suggested that life satisfaction, as measured by the SOS-10, would be negatively associated with exercise dependence, muscle dysmorphia, and disordered eating symptoms. Thus, we conducted a series of Pearson bivariate correlations. We found partial support for this hypothesis. As can be seen in Table 3, the SOS-10 was not significantly associated with the EDS (exercise dependence; $r = .16$, $p = .11$) or the EPSI ($r = -.06$, $p = .53$), suggesting that life satisfaction was not associated with exercise dependence or eating disorder symptoms in our sample. However, the SOS-10 was significantly and negatively associated with the MDDI total score ($r = -.30$, $p < .01$), suggesting that more muscle dysmorphia symptoms are associated with less life satisfaction.

Given that there was some evidence to suggest that the EPSI and MDDI subscales may be relatively independent, we also assessed this hypothesis by examining associations between the SOS-10 and subscales from these measures. As can be seen in Table 4, a number of associations were found. The SOS-10 was significantly associated with the EPSI subscales Body Dissatisfaction ($r = -.34$, $p < .001$) and Excessive Exercise ($r = .20$, $p < .05$). This implies that higher life satisfaction was associated with lower levels of body dissatisfaction, as is represented

by a moderate negative correlation, while *increased* rates of excessive exercise were associated with higher life satisfaction, as shown by a weak positive correlation. Additionally, the SOS-10 was significantly associated with the MDDI subscale Appearance Intolerance ($r = -.47$, $p <$ .001), but not the other two subscales. These results indicate that heightened levels of appearance intolerance were strongly associated with lowered life satisfaction.

Hypothesis 2

In hypothesis two, we asserted that masculine gender role identification would be associated with exercise dependence and muscle dysmorphic symptoms. We assessed this hypothesis using Pearson Bivariate correlations between the BSRI masculinity scale, the EDS total score, and the MDDI total score, respectively. As expected, the BSRI masculinity scale was significantly associated with the EDS ($r = .38$, $p < .001$), implying that the more masculine a participant identifies as being, the more likely they are to report higher scores for exercise dependence. However, the BSRI masculinity scale was not significantly associated with the MDDI total score ($r = -.02$, $p = .84$).

In examining relationships within the MDDI subscales, significant correlations were found between BSRI masculinity scores and two of the three subscales, Appearance Intolerance ($r = -.34$, $p < .001$) and Functional Impairment ($r = .31$, $p < .01$). The moderate negative correlation between masculinity and appearance intolerance indicates that as identification with masculinity grows, appearance intolerance scores decrease; conversely, the positive association between masculinity scores and functional impairment suggests that as masculinity scores increase, scores on the functional impairment scale do as well.

Hypothesis 3

In hypothesis three, we suggested that feminine gender role identification would be associated with disordered eating symptoms. We assessed this hypothesis using a Pearson bivariate correlation focusing on the relationship between the BSRI femininity scale and the total score on the EPSI. However, the association between these variables was not significant ($r = .07$, $p = .51$). This result carried over to the EPSI subscales as well, as no significant relationship was found between femininity scores and subscale scores.

Hypothesis 4

In our fourth hypothesis, we asserted that muscle dysmorphic symptoms and disordered eating symptoms would be positively associated with should-self discrepancy. As a reminder to the reader, the should-self discrepancy in this study assessed the discrepancy between what participants felt others believed they should look like physically and what they felt they actually looked like. We examined this hypothesis using Pearson Bivariate correlation, aiming to examine the relationship between the MDDI and EPSI and the should-self discrepancy scale, respectively. However, neither the MDDI ($r = .12$, $p = .25$) nor the EPSI ($r = -.00$, $p = .97$) displayed significant relationships with scores on the should-self discrepancy scale. Additionally, no significant relationships were found between should-self discrepancy and the two symptom clusters on the EPSI scale, the behavioral cluster ($r = -.13$, $p = .20$) and the cognitive cluster ($r = .19$, $p = .06$).

Despite no noteworthy relationships being found within the total scale scores for the MDDI and EPSI, significant correlations *did* exist within some of their respective subscales. Should-self discrepancy was significantly related to the MDDI subscales Functional Impairment ($r = -.24$, $p < .05$) and Appearance Intolerance ($r = .42$, $p < .001$). As such, higher scores on the

Should-Self Discrepancy scale were associated with decreased functional impairment scores and increased appearance intolerance scores. Additionally, should-self discrepancy showed significant correlations with the following EPSI subscales: Body Dissatisfaction ($r = .36$, $p < .001$), Excessive Exercise ($r = -.28$, $p < .01$), and Muscle Building ($r = -.23$, $p < .05$). Should-self discrepancy scores showed a moderate positive correlation with Body Dissatisfaction, implicating that as participants identified as more should-self discrepant, their Body Dissatisfaction scores would increase. In contrast, negative correlations indicate that as Should-Self Discrepancy scores increase, participants would report decreased rates of excessive exercise and muscle-building habits.

Hypothesis 5

In our final hypothesis, we suggested that disordered eating symptoms would be positively associated with ideal self-body discrepancies. As a reminder to the reader, the ideal-self body discrepancies assessed the degree to which the participant viewed their current body as discrepant from what they felt their ideal body is. Higher scores suggest the individual feels their body currently is very discrepant from what they feel would be ideal. Counter to expectations, we did not find a significant association between the ideal-self body discrepancy and the EPSI total score ($r = .04$, $p = .69$), nor did we find an association between the ideal-self body discrepancy and the EPSI behavioral symptom cluster ($r = -.12$, $p = .25$). However, we did find an association between the EPSI cognitive symptom cluster and the ideal-self body discrepancy ($r = .26$, $p < .01$).

Ideal-self discrepancy was also significantly associated with three EPSI subscales, which interestingly represented features/scales from both symptom clusters. EPSI subscales showing significant correlations with ideal-self discrepancy scores were Body Dissatisfaction ($r = .49$, $p <$

.001), Excessive Exercise ($r = -.36$, $p < .001$), and Binge Eating ($r = .20$, $p < .05$). These data

indicate that as ideal-self discrepancy scores increased, reported experiences of bodily

dissatisfaction and binge eating habits increased as well, while reports regarding excessive

exercising habits decreased.

Exploratory Findings

In addition to the hypothesis tests performed above, we conducted a series of analyses to

explore variables within our dataset. These findings should be viewed with caution as they were

not obtained from an a priori hypothesis. Nonetheless, they may be useful in guiding future

research endeavors in this area.

Self-Discrepancy and Body Dissatisfaction

A novel feature of this study is that body dissatisfaction was assessed in multiple ways.

Initially, we used a traditional, self-report approach. First, the EPSI contains a subscale that

specifically assesses body dissatisfaction. Second, the MDDI focuses on a specific type of body

dissatisfaction, muscle dysmorphia. Finally, we included a self-discrepancy approach based on

prior work in self-esteem. This approach produced a total discrepancy score (TSD), an ideal-self

body discrepancy score (ISD), and a should-self body discrepancy score (SSD). To assess if our

self-discrepancy approach was valid, we conducted Pearson correlations comparing the self-

report indexes of body dissatisfaction with the three self-discrepancy scores. Additionally, as the

previously conducted association analyses indicated the MDDI subscales should likely be treated

as separate scales (rather than analyzed as a total score), correlations were drawn using the three

subscales rather than the total MDDI scores.

As can be seen in Table 5, a number of statistically significant correlations were found.

The MDDI Functional Impairment subscale was weakly, negatively correlated with all forms of

self-discrepancy (TSD: $r = -.24$, $p < .05$; ISD: $r = -.20$, $p < .05$; SSD: $r = -.24$, $p < .05$), implying

that participants who reported greater feelings of self-discrepancy typically stated that they

experienced fewer instances of impairment as a result of their exercise habits. Further, the MDDI

Appearance Intolerance subscale showed moderate, positive correlations with all three self-

discrepancy measurements (TSD: $r = .51$, $p < .001$; ISD: $r = .50$, $p < .001$; SSD: $r = .42$, $p <$

.001), indicating that as self-discrepancy score grew, so too did reported feelings of discontent

toward one's appearance. Similarly, the EPSI Body Dissatisfaction subscale was moderately,

positively correlated with each self-discrepancy assessment (TSD: $r = .47$, $p < .001$; ISD: $r = .49$,

$p < .001$; SSD: $r = .36$, $p < .001$), further reiterating connections between self-discrepancy scores

and increased dissatisfaction toward one's body.

Masculinity and EPSI Symptom Clusters

As prior research has indicated that men may be more likely to report experiencing

behavioral symptoms of disordered eating rather than cognitive symptoms (Gallagher et al.,

2021), we wanted to examine how this pattern might translate to our research provided our

specific focus on gender role identification. To conduct this analysis, we used Pearson

correlations to examine relationships between the two EPSI symptom clusters- behavioral and

cognitive- and gender role identification. As can be seen in Table 6, our analyses revealed a

statistically significant, positive relationship between BSRI Masculinity scores and the EPSI

Behavioral Symptom Cluster scores ($r = .35$, $p < .001$), indicating that the more masculine

participants identified themselves to be, the more likely they were to report experiencing higher

levels of behavioral disordered eating symptoms. No significant results were produced for the

potential relationship between femininity and cognitive symptoms ($r = -.05$, $p = .65$). Of note,

increased scores on the BSRI Masculinity scale were also positively correlated with the EPSI

scale as a whole ($r = .30$, p $< .001$).

Predicting Life Satisfaction

Given that few studies explore how various aspects of disordered eating, excessive

exercise, and body dissatisfaction impact men, we decided to conduct a stepwise regression

analysis using the subscales of the MDDI, the subscales of the EPSI, the EDS total score, as well

as gender role identification as reflected by BSRI scores to determine which variables are most

uniquely associated with life satisfaction within our sample. As can be seen in Table 7, the

model produced significant results in Step 1 ($R = .48$, $R^2 = .22$; $F [1, 97] = 29.37$, $p < .001$), and

included the BSRI Masculinity scale. In Step 2, adding the MDDI Appearance Intolerance

subscale resulted in a statistically significant increase in the amount of variance explained ($\Delta R^2 =$

.12; $\Delta F [2, 96] = 15.68$, $p < .001$), and the model itself was also significant ($R = .58$, $R^2 = .33$; F

$[2, 96] = 24.75$, $p < .001$). The addition of the EPSI Restriction subscale in Step 3 resulted in

further increases in the model's explanatory power ($\Delta R^2 = .07$; $\Delta F [3, 95] = 11.06$, $p < .01$), and

the model was significant as well ($R = .64$, $R^2 = .31$; $F [3, 95] = 21.91$, $p < .001$). Finally, in Step

4, the amount of variance explained was further improved by the addition of the BSRI

Femininity scale ($\Delta R^2 = .03$; $\Delta F [4, 94] = 4.90$, $p < .05$), and the final model was statistically

significant ($R = .66$, $R^2 = .41$; $F [4, 94] = 20.85$, $p < .001$). All scales included in the final model

made statistically significant, unique contributions (See Table 7).

Mediation Analysis

After conducting a stepwise regression analysis to determine the best predictors for life

satisfaction, we wanted further to examine if the relationship between self-discrepancy and life

satisfaction was potentially mediated by other variables. To establish whether or not these effects

existed between our variables, we used Hayes' PROCESS macro for SPSS which employs a

regression-based technique to assess for mediation. In this approach, 5,000 bootstrapped samples

are calculated. Mediation is indicated when 95% confidence intervals for the "indirect paths"

(i.e., paths that "go through" mediators) do not contain a zero. The specific model we tested

explored if the association between the Physical Self-Discrepancy Total and the SOS-10 scores

(assessing subjective well-being) were mediated by the BSRI Masculinity and MDDI

Appearance Intolerance scales. As is shown in Figure 1, these analyses produced significant

indirect effects for both mediators. In other words, the main effect for the relationship between

physical self-discrepancy and the SOS-10. When it was the only variable present, Self-

Discrepancy scores were a significant predictor for SOS-10 scores, with a beta of -.40 ($R = .40$,

$R^2 = .16$; F [1, 97] = 18.01, $p < .001$). Once the BSRI Masculinity and MDDI Appearance

Intolerance scales were included, self-discrepancy lost the majority of its predictive power, (i.e.,

it dropped to $\beta = -.08$, p = .46), despite the model as a whole improving in explanation of

variance ($R = .59$, $R^2 = .34$; F [3, 95] = 16.60, $p < .001$).

In examining Self-Discrepancy scores, a bivariate model predicting BSRI Masculinity

scores produced significant results ($R = .46$, $R^2 = .22$; F [1, 97] = 27.08, $p < .001$), as did another

bivariate model predicting MDDI Appearance Intolerance scores ($R = .51$, $R^2 = .26$; F [1, 97] =

33.61, $p < .001$). Similarly, bivariate analyses examining the SOS-10 as a dependent variable

showed significant results regarding masculinity ($R = .48$, $R^2 = .23$; F [1, 97] = 29.37, $p < .001$)

and appearance intolerance ($R = .47$, $R^2 = .23$; F [1, 97] = 28.08, $p < .001$). Finally, when all

variables were accounted for in the model, the PROCESS macro produced significant indirect

effects going through the BSRI Masculinity and MDDI Appearance Intolerance scales which

were both significant at a $p < .05$ level. These results suggest that the relationship between

physical self-discrepancy and life satisfaction is explained by one's sense of masculinity and poor appearance intolerance. As such, when men experience a greater discrepancy between how they view their body and how they wish their body was, it can produce feelings of masculine inadequacy and intolerance for their physical appearance, which lowers the quality of their life.

Discussion

As a whole, our findings demonstrate a variety of significant, complex relationships surrounding masculinity, disordered eating, exercise, and body-image. Though positive relationships existed between many scales and subscales, masculinity correlated with each of these aspects in different ways. One's reported adherence to a masculine identity *is* related to increased disordered eating symptomatology for men within this sample, though it is interestingly also related to higher life satisfaction and lowered self-discrepancy, likely due to varying satisfaction with meeting gender expectations. Throughout the results, exercise habits- even those that outwardly might appear problematic or excessive- were consistently connected with higher life satisfaction and lowered self-discrepancy, perhaps providing implications for the perceptions these men may have about their own habits and practices.

We initially proposed that life satisfaction would be inversely related to experiences of excessive exercise, body dysmorphia, and disordered eating. Our results support some aspects of this prediction, as life satisfaction *was* negatively associated with the muscle dysmorphic disorder symptoms- mainly reliant on those related to appearance intolerance- as well as the disordered eating symptoms revolving around body dissatisfaction. Life satisfaction was also inversely related to body-oriented self-discrepancy. These relationships suggest a significant connection between happiness with one's life and satisfaction with one's body and appearance,

in line with prior research on appreciation of the body and flourishing independent of gender (Davis, Fowler, Best & Both, 2003). However, no associations were found between measures of exercise dependence, impairment as a result of exercising habits, or goals of muscularity and life satisfaction, and a *positive* (though somewhat weak) association was shown between life satisfaction and one excessive exercise measure. As these measures represent several different scales, it is possible that the various assessments were worded or framed in different manners (i.e., being positively, negatively, or neutrally loaded), which could explain the disconnect between the multiple assessments of exercise habits. Additionally, exercise is widely considered to be beneficial for mental and physical health, as well as quality of life (Guszkowska, 2004; Kashihara, Maruyama, Murota, & Nakahara, 2009; Gillison et al., 2009); as such, people may not judge their exercise behavior to be problematic (even if they scored high on measures of excessive exercise), believing that any exercise is good exercise, and may thusly not experience the drop in life satisfaction we expected in association with problematic exercise habits. Finally, there may be moderating factors that were not directly assessed in this study. These may serve to alter relationships between exercise and well-being.

We anticipated positive relationships between masculine identity, exercise dependence, and muscular dysmorphic symptoms. In line with this prediction, identifying with masculine norms was associated with dependent exercise habits and impairment as a result of these habits. This pattern is similar to those within the existing literature (Dawson & Hammer, 2020). Conversely, masculinity was negatively associated with appearance intolerance, one of three major aspects of muscular dysmorphia. Muscularity and physical fitness are major pillars of masculine beauty norms (Murnen & Don, 2012); as such, we might conclude that those who feel they are more *congruent* with masculine norms and expectations would feel less dissatisfied with

their appearance. Prior to conducting analyses, we had expected that experiences of disordered

eating symptoms would "cloud the judgment" of men's appearance-based perceptions, in line

with understandings of connections between disordered eating and body dysmorphia. Based on

the correlations found between masculinity and several factors of disordered eating

symptomatology, we would likely predict, then, that masculinity may also correlate to

appearance intolerance, as the dysmorphia often connected to/driving these symptoms could

result in an underestimation of how close one is to the masculine ideal. However, our results are

inconsistent with this expectation. These findings could stem from the fact that masculinity has

historically been found to be associated with heightened self-esteem and lowered body/weight

dissatisfaction across genders (Hawkins, Turell, & Jackson 1983; Jackson, Sullivan, & Rostker,

1988) potentially explaining lowered reports of appearance intolerance for the more masculine-

identified individuals in our sample.

No significant relationship was found between femininity and disordered eating

symptoms within this sample - both with regard to total scale scores and individual subscales.

Prior research had indicated a connection between feminine role identity and heightened

experiences of eating disorders and symptoms of disordered eating in women (Murnen &

Smolak, 1997) as well as some aspects of body image in men (Jackson, Sullivan, & Rostker,

1988). However, our results do not replicate these findings. This discrepancy between current

and past research further highlights the need for further involvement of men as participants in

disordered eating research, in addition to emphasizing the importance of approaching gendered

generalizations made only using women's responses and experiences with caution. More

observations should be made in future research to better examine femininity's relationship with

disordered eating in a gender-inclusive manner.

With regard to self-discrepancy, lowered discrepancy between men's should- and current-bodily selves was associated with heightened likelihood of engaging in excessive exercise, increased rates of prioritizing muscle building, and increased dysfunction as a result of these habits. Those who feel that they are closer to the "ideal" body type may see themselves as putting "more effort" into achieving said ideal, even if said practices reflect problematic tendencies of impairment and excess. Additionally, *heightened* should-self discrepancy was also related to intolerance of appearance and dissatisfaction with one's body. Taken together, these results may reflect the extremes of the two sides of body issues; those who experience low discrepancy also report lowered levels of appearance-based dissatisfaction, but heightened rates of potentially problematic exercising behavior, whereas those who are more should-self discrepant report fewer problematic exercise habits but increased dissatisfaction with their body and appearance. These results could also again reflect broader patterns in adherence to gender norms. Physical fitness and muscularity are often central to the beauty expectations placed on men (Murnen & Don, 2012). As such, men who feel as though they are not meeting this expectation (i.e., high in should self-discrepancy) may feel worse about their appearance as a result. Men who *do* feel as though they are meeting the standard (i.e., low in should-self discrepancy) likely more often pursue exercise, muscle building, and physical activity, potentially in ways that could become (or have already become) problematic or harmful.

We predicted that a discrepancy between a person's ideal and current bodily selves would show a positive affiliation with their reported experiences of disordered eating. This hypothesis was supported in some regards, as increased ideal self-discrepancy was connected to rates of both binge eating and body dissatisfaction, suggesting that those who were unhappy with their body image and felt that their eating habits were out of control also experienced a greater

disconnect between how their body looks and how they wish it appeared. However, increased

ideal self-discrepancy was also associated with lowered reports of excessive exercise. This aligns

with previous claims regarding exercise and self-image, as this increase in excessive exercise is

seen across decreases in both measures of self-discrepancy.

  In our exploratory analyses, all measures of bodily self-discrepancy- ideal, should, and

total- showed moderate-to-strong, positive correlations with measures assessing body

dissatisfaction and appearance intolerance. These findings suggest that those who are less

satisfied with their appearance experience greater disconnect between how they currently look

and how they want/feel expected to look. Additionally, those who were less self-discrepant

reported more frequent muscularity-seeking habits that could cause dysfunction/impairment in

their daily lives. Given that all functional-impairment-related items on the MDDI were oriented

toward exercise, we could expect that those who place greater emphasis on exercise, even to the

point of impairment, would feel that they are ultimately closer to their ideal or expected beauty

norms, as stated earlier.

  Further on in our exploratory results, masculine identity was associated with total

disordered eating symptomatology and disordered eating symptom patterns. However, we did

not find a relationship between masculinity and cognitive eating disorder symptom clusters. Prior

research had suggested that men experience behavioral, action-based symptoms of disordered

eating more often than cognitive symptoms (Gallagher et al., 2021). Utilizing a sample of men,

our research may suggest further refinement of this idea, as greater identification with masculine

gender roles was not only associated with behavioral symptomatology, but with disordered

eating symptoms as a whole, potentially indicating risk factors for disordered eating in men.

However, it is highly important to note that these findings and conclusions could be confounded

by the fact that our research only feature men as participants. As such, continued research is needed to more firmly support connections between patterned symptomatology of disordered eating and gender role identity in a more expansive manner.

In our regression analyses determining predictors of life satisfaction, we found that heightened adherence to masculinity, decreased appearance intolerance, lowered restriction surrounding food and eating, and increased adherence to femininity worked together to form the strongest predictive model of life satisfaction within our dataset. Interestingly, correlational analyses had shown that increased masculinity *did* relate to heightened life satisfaction, but also to heightened experiences of issues that are typically viewed as negative, such as various aspects of disordered eating and excessive/dependent exercise habits. Based on the connection with these more negative experiences, we would expect to see lowered life satisfaction, as is the case in prior work on masculinity and well-being (Kaya et al., 2019); however, our results clearly do not reflect this relationship. This leads us to a few possible explanations. First, people could be unaware of the potentially harmful nature of these experiences/habits, and their satisfaction with their adherence to appearance-based gender norms overrides the ability to see these practices as negative. Second, the influence of femininity in the model reflects a more balanced, egalitarian approach to gender norms, potentially increasing life satisfaction while lowering the likelihood of experiencing the issues that may normally be present alongside heightened masculinity (Matud, Bethencourt, & Ibáñez, 2013). Further, the items meant to assess gender role identification may simply represent culturally desirable qualities within and across normative lines, and people who feel they possess a greater number of desirable traits are happier with their lives overall. These ideas are, however, purely speculative, and more research would be required to definitively understand the role of complex gender norm adherence and satisfaction with life.

Lowered appearance intolerance and restrictive eating habits further aid in predicting one's life satisfaction in addition to gender role adherence, implying that those who were not dissatisfied with their looks and did not place as much emphasis on controlling their food intake were overall more satisfied with their lives.

Finally, in our exploration of mediation effects, we determined that the level of disconnection between one's current and desired bodily selves may influence their perception of their own masculinity and their satisfaction with their appearance, factors which subsequently lead to declines in overall life satisfaction. These results highlight the importance of discrepancy in factors associated with life satisfaction; we could assume that men who judged themselves to be low in masculinity and tolerance toward their appearance, for instance, but did not report a feeling disconnected from who they wanted to be or felt expected to be, would not see the same dip in life satisfaction as those who were minimally masculine, appearance intolerant, *and* highly discrepant. This idea may relate to the concept of *gender role conflict,* the idea that those who feel that they are not meeting the gendered expectations placed on them experience distress and/or dysfunction (O'Neil, 2015), represented by physicality and appearance for our sample. For example, Cole and colleagues (2018) found that, though many aspects of masculinity were related to positive thinking and psychological well-being, the presence of gender role conflict alongside conformity to masculine norms resulted in significantly lowered well-being and positive outlooks.

Our study is not without limitations. There is an issue with drawing broad conclusions about masculinity in a sample including only men, as it is difficult to tell whether the results stem from masculine identity *within* men or are a broader pattern for people in general. For instance, it is unknown whether these findings would generalize to masculinity outside of the context of

male-identified groups or would be exclusive to men. The topic would benefit from inclusion of

more diverse gendered representation in order to make the results more generalizable and further

solidify conclusions made about gender role identification versus gender identity. Additionally,

no analysis of racial, cultural, or sexuality-based intersections was conducted within our dataset.

A more intersectional approach considering the impacts of these factors could be advantageous

to better understanding the potential relationships present between cultural and identity-based

factors, masculinity, and disordered eating/body-image patterns.

As a whole, our research suggests important implications regarding masculinity,

disordered eating habits, and body-image in men. Masculinity seems to connect to discrepancy,

life satisfaction, body image, and disordered eating in complex and varied manners, often

impacted by other factors to create complicated, intertwined relationships. Future research

should further explore these connections in a more gender-inclusive, culturally considerate

manner, in order to more accurately and fully represent the nature of these issues. The

assessment of gender role identification could also be improved in future studies, perhaps

incorporating a more recent measure to determine masculinity/instrumentality and

femininity/expressiveness in a manner that is more accurate to the current gender climate.

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Figure 1

Mediation Analysis
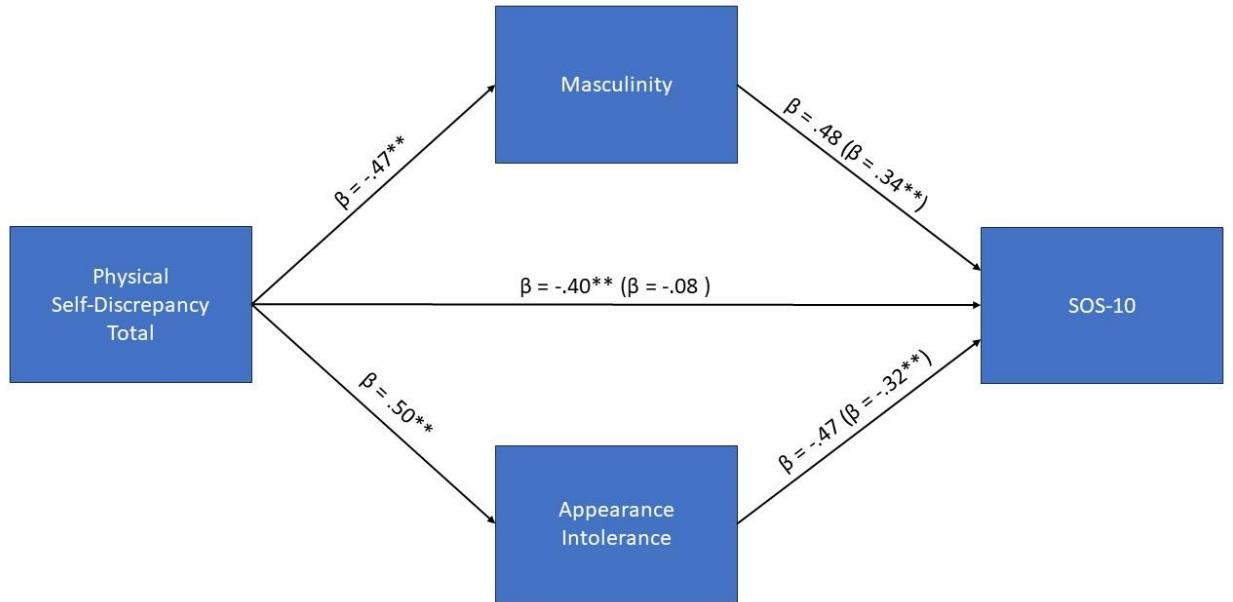
Table 1

Demographic participant data.

	M	*SD*
Age	35.55	12.96
Gender	*N*	*%*
Man	99	100.0%
Ethnic Identity	*N*	*%*
White	69	69.7%
Asian	11	11.1%
Black/African American	9	9.1%
Hispanic	9	9.1%
Other	1	1.0%
Sexuality	*N*	*%*
Heterosexual	79	79.8%
Bi/Pansexual	10	10.1%
Homosexual	10	10.1%

Table 2

Descriptive statistics reflecting all scales and subscales.

BSRI	*N*	*M*	*SD*	*Min*	*Max*	*Alpha*
Masculinity	99	42.29	12.07	10.00	70.00	.93
Femininity	99	49.56	11.43	17.00	70.00	.93
MDDI	*N*	*M*	*SD*	*Min*	*Max*	*Alpha*
Scale Total	99	27.69	7.79	13.00	49.00	.76
Drive for Size	99	10.62	5.03	5.00	25.00	.88
Appearance Intolerance	99	10.68	4.62	4.00	20.00	.84
Functional Impairment	99	6.61	3.05	4.00	16.00	.82
EDS	*N*	*M*	*SD*	*Min*	*Max*	*Alpha*
Scale Total	99	39.21	15.83	21.00	89.00	.95
Withdrawal Effect	99	7.19	3.54	3.00	15.00	.92
Continuance	99	5.34	2.92	3.00	15.00	.87
Tolerance	99	7.24	3.57	3.00	15.00	.94
Lack of Control	99	4.36	2.35	3.00	15.00	.91
Reduction in Other Activities	99	4.84	2.28	3.00	12.00	.78
Time	99	5.16	2.53	3.00	13.00	.78
Intention Effects	99	5.07	2.87	3.00	13.00	.94
EPSI	*N*	*M*	*SD*	*Min*	*Max*	*Alpha*
Scale Total	99	42.91	22.22	3.00	120.00	.92
Behavioral Cluster	99	24.52	14.89	2.00	63.00	.89

Cognitive Cluster	99	18.38	9.91	0.00	57.00	.86
Body Dissatisfaction	99	7.77	5.30	0.00	27.00	.84
Binge Eating	99	8.58	6.68	0.00	11.00	.91
Cognitive Restraint	99	4.90	4.82	0.00	12.00	.66
Purging	99	0.78	1.99	0.00	11.00	.75
Restriction	99	4.90	4.82	0.00	19.00	.88
Excessive Exercise	99	6.06	5.08	0.00	20.00	.88
Negative Attitudes toward Obesity	99	6.10	5.12	0.00	20.00	.90
Muscle Building	99	4.21	4.01	0.00	16.00	.79

SOS-10	*N*	*M*	*SD*	*Min*	*Max*	*Alpha*
Scale Total	99	36.12	13.94	3.00	60.00	.95

SD	*N*	*M*	*SD*	*Min*	*Max*	*Alpha*
Scale Total	99	37.34	10.05	10.00	60.00	.87
Ideal-Self	99	18.95	5.66	5.00	30.00	.83
Should-Self	99	18.39	5.38	5.00	30.00	.78

Note: BSRI = Bem Sex Role Inventory; MDDI = Muscle Dysmorphic Disorder Inventory; EDS = Exercise Dependence Scale; EPSI = Eating Pathology Symptoms Disorder; SOS-10 = Schwartz Outcomes Scale; SD = Self-Discrepancy.

Table 3

Correlations among total scale scores.

	SOS-10	MDDI	EDS	EPSI	SD- Ideal	SD- Should	BSRI-Masculinity	BSRI-Femininity
SOS-10	–	-.30*	.16	-.06	-.37**	-.36**	.48**	.33**
MDDI	-	–	.45**	.62**	.17	.12	-.02	-.06
EDS	-	-	–	.71**	-.30**	-.24*	.38**	.12
EPSI	-	-	-	–	.04	-.00	.30**	.07
SD- Ideal	-	-	-	-	–	.68**	-.43**	-.24**
SD- Should	-	-	-	-	-	–	-.42**	-.17
BSRI-Masculinity	-	-	-	-	-	-	–	.37**
BSRI-Femininity	-	-	-	-	-	-	-	–

Note: SOS-10 = Schwartz Outcomes Scale; MDDI = Muscle Dysmorphic Disorder Inventory; EDS = Exercise Dependence Scale; EPSI = Eating Pathology Symptoms Inventory; SD = Self-Discrepancy; BSRI = Bem Sex Role Inventory.

Table 4

Correlations among EPSI & MDDI subscales and other major measures.

EPSI	SD- Ideal	SD- Should	Masculinity	Femininity	SOS-10
Binge Eating	.20*	.12	.05	.03	-.10
Muscle Building	-.19	-.23*	.23*	.12	.10
Negative Attitudes toward Obesity	-.07	-.04	.30**	-.05	-.02
Excessive Exercise	-.36**	-.28**	.41**	.11	.20*
Restriction	-.11	-.08	.28**	.11	-.15
Purging	.01	-.02	.26**	.16	.10
Cognitive Restraint	.13	.07	.18	.12	.13
Body Dissatisfaction	.49**	.36**	-.11	-.10	-.34**
MDDI	SD- Ideal	SD- Should	Masculinity	Femininity	SOS-10
Functional Impairment	-.20*	-.24*	.31**	.15	.03
Appearance Intolerance	.50**	.42**	-.34**	-.18	-.48**
Drive for Size	-.08	-.03	.07	-.02	-.04

Note: EPSI = Eating Pathology Symptoms Inventory; MDDI = Muscle Dysmorphic Disorder Inventory;

SD = Self-Discrepancy; SOS-10 = Schwartz Outcomes Scale.

Table 5

Associations between discrepancy scales and self-report scales assessing body dissatisfaction.

	MDDI-FI	MDDI-AI	MDDI-DFS	EPSI-BD
Total Discrepancy	-.24*	.51**	-.06	.47**
Ideal-Self Discrepancy	-.20*	.50**	-.08	.49**
Should-Self Discrepancy	-.24*	.42**	-.03	.36**

Note. MDDI-FI = Muscle Dysmorphic Disorder Inventory- Functional Impairment Subscale; MDDI-AI = Muscle Dysmorphic Disorder Inventory- Appearance Intolerance Subscale; MDDI-DFS = Muscle Dysmorphic Disorder Inventory- Drive for Size Subscale; EPSI-BD = Eating Pathology Symptoms Disorder- Body Dissatisfaction Subscale.

Table 6

Correlations between gender role identity and EPSI symptom clusters.

	BSRI- Masculinity	BSRI- Femininity
EPSI Behavioral Cluster	.35**	.13
EPSI Cognitive Cluster	.14	-.05

Note: EPSI = Eating Pathology Symptoms Inventory; BSRI Bem Sex Role Inventory.

Table 7

Stepwise regression predicting Life Satisfaction

Step	R	R²	F	ΔR²	ΔF	Scale	β	t	p
1	.48	.22	29.37**	-	-				
						BSRI-M	.48	5.42	<.001
2	.58	.33	24.75**	.12	15.69**				
						BSRI-M	.36	4.10	<.001
						MDDI-AI	-.35	-3.96	<.001
3	.64	.39	21.91**	.07	11.06**				
						BSRI-M	.45	5.12	<.001
						MDDI-AI	-.31	-3.70	<.001
						EPSI-R	-.28	-3.33	.001
4	.66	.41	18.33**	.03	4.89*				
						BSRI-M	.40	4.53	<.001
						MDDI-AI	-.30	-3.56	<.001
						EPSI-R	-.28	-3.47	<.001
						BSRI-F	.18	2.21	.03

Note: BSRI-M = Bem Sex Role Inventory- Masculinity Scale; MDDI-AI = Muscle Dysmorphic Disorder Inventory- Appearance Intolerance Subscale; ESPI-R = Eating Pathology Symptoms Inventory- Restriction Subscale; BSRI-F = Bem Sex Role Inventory- Femininity Scale.

Appendix A

Consent form:

Title of the Project:	Masculinity, Body Image, and Disordered Eating.
Principal Investigator:	Paige Allen
Faculty Advisor:	Dr. Caleb Siefert

The researcher invites you to participate in a research study examining the relationships between masculinity, body image, eating, and exercise patterns. If you agree to be part of the research study, you will be asked to complete and respond to a selection of scales relating to the previously mentioned topic.

There are no risks associated with this study because the data collection is completely anonymous, though the scales may contain potentially triggering topics. As an incentive for participating in this research, you will be given $3.00 upon completion. To be eligible for payment, you must:

1) Identify as a man.
2) Be over the age of 18 and currently reside in the United States.
3) Reach the end of the survey, copy the randomly generated number code, and paste the code into Prolific.
4) Correctly respond to the study's attention-check questions.
5) Answer 90% of the questions.

The data you provide will be stored anonymously on a password-protected laptop. The data will not be made available to other researchers for other studies following the completion of this research study and will not contain information that could identify you. There are some reasons why people other than the researchers may need to see the information you provided as part of the study. This includes organizations responsible for making sure the research is done safely and properly such as the Dearborn IRB.

Participating in this study is completely voluntary. Even if you decide to participate now, you may change your mind and stop at any time. If you decide to withdraw early, any collected data will be expunged from the project. If you stop before reaching the end of the survey or before completing 90% of the questions, you will not be eligible for compensation.

If you have questions about this research, you may contact me at allenpai@umich.edu or my faculty advisor at csiefert@umich.edu.

If you have questions regarding your rights as a research participant, or wish to obtain information, ask questions, or discuss concerns with someone other than the researcher(s), You may contact the Dearborn IRB Administrator at (734) 763-5084. Written questions should be directed to the Office of Research and Sponsored Programs, 2066 IAVS, University of

Michigan-Dearborn, Evergreen Rd., Dearborn, MI 48128-2406, (313) 593-5468; the Dearborn IRB Administrator at (734) 763-5084, or email Dearborn-IRB@umich.edu.

      If you agree to participate in this study, simply click on the "continue" arrow below. If you do not wish to participate, please close your web browser. Thank you for considering participation in this study.

Footnotes

[1] This study had other limitations as well. For instance, the authors note that the measurement of gender roles themselves may present particular limitations for their results (as is a common issue with research involving social constructs that may change over time). Both the BSRI and the PAQ- the two major scales used to measure participants' gender identification- were originally constructed in the 1970s. As gender roles and expectations tend to have significant variability as time and culture evolve (consider a source for this), Mulnen and Smolak express that these measures of gender identification may not accurately or fully reflect the current cultural expectations of gender performance. They note that, for example, a discrepancy between one's own modern gender role identification and the traditional identification that is expected of them (from parents, friends, society at large, etc.) may be a more accurate predictor of eating disorder behaviors in more modern eras. Though there seemed to be no difference in effect size based on publication date, these concerns may need to be further explored in future research.

[2] There were noteworthy differences in nationality within the subscales of each measure; for example, American and Australian men reported the highest drive for muscularity, and the masculine norm of violence was most substantially linked to British men's body image. These differences across the four included nationalities could indicate the importance of cultural definitions of masculinity, as different cultures may place more or less emphasis on the various components of "what makes a man."