

# Eating disorder recovery in men: A pilot study

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## Abstract

**Objective:** This pilot study examined the validity of a comprehensive definition of recovery (physical, behavioral, and cognitive recovery indices) for the first time in men.

**Method:** Men with an eating disorder history were recruited from former patients at eating disorder centers, university campuses, and fitness centers/gyms. At baseline and a 12-month follow-up, data were collected via online surveys, diagnostic interviews, and measured weight and height from men with an eating disorder history ( $n = 36$ ) and men with no eating disorder history ( $n = 27$ ).

**Results:** Of the men with an eating disorder history, 15 met criteria for an eating disorder, 7 met criteria for partial recovery, and 5 for full recovery. Men who met criteria for full recovery did not differ significantly from men with no eating disorder history and had significantly lower levels of broad eating pathology, thinness and restricting expectancies, body shame, difficulties in stopping thoughts about body, food, or exercise, and male body attitudes related to muscularity and body fat than men with an eating disorder. Men meeting criteria for full recovery had higher levels of body acceptance and intuitive eating than men who met criteria for partial recovery or an eating disorder. In terms of predictive validity, of those fully recovered at baseline, 60% also met full recovery criteria at follow-up.

**Discussion:** Preliminary findings suggest that a comprehensive definition of recovery applies to men. Although research with larger samples is needed, this research provides some optimism for the potential of recovery in men.

## KEYWORDS

behavioral, cognitive, eating disorder recovery, longitudinal, men, physical

## 1 | INTRODUCTION

Eating disorders affect physical, behavioral, and psychological well-being. Historically, the definition of recovery from an eating disorder has not been standardized to incorporate all of these aspects of the disorder (Bardone-Cone, Hunt, & Watson, 2018). The inconsistency and lack of breadth in a definition of recovery impede the comparison of results across treatment outcomes studies and the identification of reliable predictors of recovery and can negatively impact the perception of recovery among patients, family members, and treatment providers.

The definition of recovery from an eating disorder, as proposed by researchers in the field, has evolved from solely physical criteria (e.g., weight; Morgan & Russell, 1975) to include behavioral criteria (e.g., absence of binge eating and compensatory behaviors; Bulik, Sullivan, Fear, & Pickering, 2000) and cognitive criteria (e.g., overvaluation of weight; Bachner-Melman, Zohar, & Ebstein, 2006; Bardone-Cone et al., 2010; Couturier & Lock, 2006). Preliminary examinations of comprehensive definitions of recovery have received support (e.g., Bardone-Cone et al., 2010), but most recovery research has focused on female samples. Recovery must be examined among men to avoid assuming that what applies to women applies to men and because the prevalence of eating disorders in men is much higher than originally thought, with recent estimates yielding a 1:2 to 1:5 men-to-women ratio (Hudson, Hiripi, Pope, & Kessler, 2007; Udo & Grilo, 2018) compared with the historical 1:9 ratio (American Psychiatric Association, 1994). The current pilot study is an initial investigation into the validity of including a cognitive recovery criterion as part of a comprehensive definition of recovery among men.

Examples of explicitly operationalized comprehensive definitions (i.e., physical, behavioral, and cognitive criteria) include research by Kordy et al. (2002) with different recovery and remission criteria for different eating disorders, Khalsa, Portnoff, McCurdy-McKinnon, and Feusner (2017) with a focus on anorexia nervosa (AN) and criteria provided for recovery and remission, and Bardone-Cone et al. (2010) with a transdiagnostic proposal of eating disorder recovery. This pilot study considers whether the Bardone-Cone et al. criteria identify a recovered group among men with a history of an eating disorder. These criteria were selected because they have demonstrated concurrent validity, albeit in women (Bardone-Cone et al., 2010), and have initial support for predictive validity (Bardone-Cone et al., 2019), with full recovery (physical, behavioral, and cognitive recovery criteria) at baseline predicting meeting criteria for full recovery 7–8 years later. Furthermore, initial research comparing comprehensive definitions of recovery proposed by Pike (1998), Kordy et al. (2002), and Bardone-Cone et al. (2010) concluded with the recommendation to adopt the Bardone-Cone et al. criteria in assessing recovery (Ackard, Richter, Egan, & Cronemeyer, 2014).

It is important to note that although having a standardized, comprehensive definition of recovery is essential from a research perspective, recovery remains a very personal and subjective experience. Indeed, the key principles of recovery orientation put forth by the

Substance Abuse and Mental Health Services Administration stress that recovery is nonlinear and characterized by multiple paths (Clay, 2012). Furthermore, in other mental health literature, distinctions are made between two conceptualizations of recovery, one research-based and one personal (Davidson, Schmutte, Dinzeo, & Andres-Hyman, 2008). In particular, recovery “from” schizophrenia reflects a measurable outcome characterized by absent or minimal disease-related psychopathology and “in” recovery focuses less on symptom level and more on a person’s ability to function in their communities despite some level of disability (Davidson et al., 2008). The current research focuses on the “from” perspective, with recovery from an eating disorder being conceptualized as a measurable outcome.

To date, research on outcomes (remission or recovery) from eating disorders in men is quite limited and has not included cognitive criteria. For example, Støving, Andries, Brixen, Bilenberg, and Hørder (2011) included physical criteria ( $\geq 85\%$  of ideal body weight) and behavioral criteria (no binge eating or purging in the prior 6 months) but no assessment of disordered eating thinking, and Agüera et al. (2017) defined remission as “total absence of symptoms meeting diagnostic criteria for at least four consecutive weeks,” which, without further probing of cognitions, does not necessarily robustly capture cognitive recovery. We have chosen to use the term “recovery” instead of “remission” in keeping with the terminology of earlier work (Bardone-Cone et al., 2010) and given that the attainment of an element of cognitive recovery has been found to occur at the latter part of the recovery process (e.g., after behavioral changes; Strober, Freeman, & Morrell, 1997), suggesting that attaining threshold levels in all three domains reflects a more robust outcome and thus recovery rather than remission.

Qualitative research by Björk, Wallin, and Pettersen (2012) identified two central themes from interviews with men describing their eating disorder recovery experience: body acceptance and a sense of self-worth. In regard to body acceptance, men reported that a more relaxed attitude about appearance let them engage in physical training without compulsivity, as well as allowed them to be more flexible with their eating (i.e., greater intuitive eating). Overall, Björk et al. (2012) noted that a common pattern in the men’s narratives involved “a great sense of freedom from various kinds of obsessions.” Thus, themes from this qualitative research of individuals with lived experience are very much in-line with more cognitive aspects of recovery included in recent researcher-developed definitions, suggesting that men’s conceptualizations of eating disorder recovery may rely significantly on how one is thinking about one’s body, food, and exercise.

The aim of this pilot study is to test the validity of a comprehensive definition of eating disorder recovery (referred to here as “full recovery”) in men, considering physical, behavioral, and cognitive indices. In examining concurrent validity of this comprehensive definition, we replicated the procedures used in Bardone-Cone et al. (2010), including the measures used for validation but additionally considered measures specific to male body attitudes as well as the constructs of body acceptance and intuitive eating, which emerged from qualitative findings with men (Björk et al., 2012). We hypothesized that the operationalization shown to be valid in women (Bardone-Cone et al.,

2010) would be valid in men, with those who meet criteria for full recovery looking similar to men with no history of an eating disorder on a wide array of eating disorder-related constructs and endorsing significantly lower levels of disordered eating than those meeting criteria for partial recovery or an eating disorder. We also examined another aspect of validity, predictive validity, by examining the degree to which meeting criteria for full recovery at baseline was associated with full recovery status at a 1-year follow-up in men.

## 2 | METHOD

### 2.1 | Participants

Participants included 36 men with a history of an eating disorder and 27 men with no history of an eating disorder. Recruitment of the eating disorder history sample occurred from former patients (18 years or older) seen at eating disorder centers (University of North Carolina at Chapel Hill [UNC] Center of Excellence for Eating Disorders, Duke Center for Eating Disorders;  $n = 11$ ; 31%), flyers posted on university campuses and fitness centers/gyms ( $n = 8$ ; 22%), and email announcements sent to university listservs ( $n = 17$ ; 47%). Individuals recruited through eating disorder centers had been treated for an eating disorder and received letters of invitation and follow-up phone calls. Recruitment efforts via flyers or listservs invited men who experienced loss of control while eating, high levels of body dissatisfaction, or a strong focus on altering body weight or shape as a way to identify individuals with eating disorder behaviors and attitudes. All interested individuals were screened via phone for lifetime eating disorder history using the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) (SCID; First, Spitzer, Gibbon, & Williams, 1995) with DSM-5 criteria applied to ensure that they met diagnostic criteria for a lifetime history of an eating disorder (AN, bulimia nervosa [BN], binge-eating disorder [BED], or other specified feeding or eating disorder [OSFED]).

Twenty-seven men, ages 18 and older, with no history of an eating disorder were recruited via email announcements sent to university listservs. Like the eating disorder sample, they were screened using the eating disorder questions of the SCID to ensure they met eligibility criteria—in this case, no eating disorder history. Participants without an eating disorder history were age-matched (within 5 years) to the eating disorder history participants.

Of the total 63 individuals who participated at baseline, 58 (92%) also participated in the data collection about 12 months later.

### 2.2 | Procedure

The current data come from a longitudinal study of men and women involving three time points. Data from men from the first time point (baseline) and last time point, occurring about 12 months later (follow-up), are presented here. At baseline, participants completed an online survey remotely (e.g., at home). This survey included an array of questionnaires covering disordered eating and body image among others constructs. Within a month of having completed the survey,

participants came to the UNC campus for a 5–6 hr visit, which included a set of diagnostic interviews and the measurement of height and weight. These same study components (survey, diagnostic interviews, measured height and weight) occurred again at follow-up. Participants were compensated financially for participating in each of the two time points. The Institutional Review Boards of UNC and Duke University approved this study.

## 2.3 | Measures

### 2.3.1 | Defining eating disorder recovery status

Measures used to categorize individuals in terms of recovery status (full recovery, partial recovery—defined below) were those used in the original recovery research (Bardone-Cone et al., 2010).

For current *eating disorder diagnosis*, the *Structured Clinical Interview for DSM-IV, Patient Edition* (First et al., 1995) was used for AN, BN, BED, and OSFED, with criteria modified as necessary to capture DSM-5 diagnoses. For *physical recovery*, a body mass index (BMI) of at least 18.5 kg/m<sup>2</sup> was required; this aligns with the World Health Organization's recommendation of a BMI less than 18.5 reflecting "underweight" (Bjorntorp, 2002). Weight and height were measured at the study visit for computation of BMI. *Behavioral recovery* was assessed at the study visit by asking about the presence of any objective binge eating, vomiting, laxative use, or fasting over the past 3 months using annotated calendars. The absence of all four eating disorder behaviors across the past 3 months was required in order to meet criteria for behavioral recovery. *Cognitive recovery* was assessed with the Eating Disorder Examination-Questionnaire (EDE-Q; Fairburn & Beglin, 1994), which was administered in the online survey and contains four subscales broadly covering eating disorder cognitions over the past 28 days: Restraint, Eating Concern, Weight Concern, and Shape Concern. Bardone-Cone et al. (2010) propose using scoring within 1 SD of age-matched community norms for each of the EDE-Q subscales as an indicator of cognitive recovery. Unlike for women, there are less well-established EDE-Q norms for men. We chose to use the norms of U.S. college students reported by Quick and Byrd-Bredbenner (2013) as their sample was large (915 men), covered an age range of 18–26 that captured the ages of most (71%) of our sample, and included various geographic regions of the United States (northeastern, mid-Atlantic, and southeastern). In the current study, coefficient alphas for the EDE-Q subscales were: .82 (Restraint), .83 (Eating Concern), .87 (Weight Concern), and .93 (Shape Concern).

Following the operationalization in Bardone-Cone et al. (2010), *full recovery* required: absence of an eating disorder diagnosis; physical recovery, operationalized as a BMI  $\geq 18.5$  kg/m<sup>2</sup>; behavioral recovery, operationalized as no binge eating, vomiting, laxatives, or fasting in the past 3 months; and cognitive recovery, operationalized as all four EDE-Q subscales within 1 SD of male norms (Quick & Byrd-Bredbenner, 2013). *Partial recovery* required: absence of an ED diagnosis, physical recovery, and behavioral recovery, but the absence of cognitive recovery (i.e., 1+ EDE-Q subscale  $>1$  SD of norms). For

rationales for the specific operationalizations, please see Bardone-Cone et al. (2010).

### 2.3.2 | Validation measures for concurrent validity

The validity of this operationalization of recovery was examined with a similar set of well-established measures as used in Bardone-Cone et al. (2010) as well as additional measures particularly relevant to men. The Eating Attitudes Test-26 (EAT-26; Garner, Olmsted, Bohr, & Garfinkel, 1982), body shame subscale of the Objectified Body Consciousness Scale (McKinley & Hyde, 1996), and thin/low body fat internalization subscale of the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ-4; Schaefer et al., 2015) are commonly used in eating disorder research and have strong psychometric support in largely female samples, as well as psychometric support in the more limited research on men. The short version of the Thinness and Restricting Expectancy Inventory (Hohlstein, Smith, & Atlas, 1998) was also administered; this short version has demonstrated reliability and validity in male samples (Davis, Guller, & Smith, 2016; Pearson, Combs, & Smith, 2010).

To explore body-related constructs of particular relevance to men, we administered the muscular/athletic internalization subscale of the SATAQ-4 (Schaefer et al., 2015), which has support for reliability and

validity in samples of college men. The Male Body Attitudes Scale (Tylka, Bergeron, & Schwartz, 2005) and the Drive for Muscularity Scale (McCreary & Sasse, 2000) were the two measures used that were developed specifically in men.

To examine body acceptance and intuitive eating, factors identified by men as central to their recovery experience (Björk et al., 2012), we administered the Body Acceptance Scale (BAS; Avalos, Tylka, & Wood-Barcalow, 2005) and the Intuitive Eating Scale (Tylka, 2006), respectively. Both have psychometric support for use in men (Tylka, 2013; Tylka & Homan, 2015). For the BAS, we used 12 of the original 13 items, excluding the item that referenced images of women in the media.

Table 1 includes brief descriptions of the well-established measures used for concurrent validity, citations reporting on their psychometric strengths in male samples, and internal consistencies in the current sample (all coefficient alphas > .80).

We also assessed obsessiveness with items similar to those developed for Bardone-Cone et al. (2010). Participants were asked how much time they typically spent thinking about their weight, part of their body, food/eating, and exercise (1 = *no time or almost no time* to 5 = *almost all of the time or all the time*) and in terms of how difficult it would be to stop thinking about each of these topics (1 = *extremely easy* to 5 = *extremely difficult*). The difference between this measure

**TABLE 1** Measures used in examining concurrent validity of the operationalization of full recovery

Measure	Description and sample references with psychometric support in men	Coefficient alpha
EAT-26 (Garner et al., 1982)	Assesses a broad array of eating disorder attitudes and behaviors Russell and Keel (2002)— $\alpha = .89$ McFarland and Petrie (2012)— $\alpha = .74$	.85
TREI—Short version (Hohlstein et al., 1998)	Assesses broad expectations for overgeneralized life improvement due to dieting and thinness Davis et al. (2016)— $\alpha = .91$	.94
Body shame subscale of OBCS (McKinley & Hyde, 1996)	Assesses the degree to which an individual feels like a bad person if they are not fulfilling cultural expectations regarding the body Cole, Davidson, and Gervais (2013)— $\alpha = .80$	.81
Thin/low fat internalization subscale of SATAQ-4 (Schaefer et al., 2015)	Assesses internalization of the thin ideal—that is, the degree to which individuals “buy into” the thin-ideal as being important and goal-worthy Schaefer et al. (2015)— $\alpha = .75$	.86
Muscular/athletic internalization subscale of SATAQ-4 (Schaefer et al., 2015)	Assesses internalization of the muscular ideal—that is, the degree to which individuals “buy into” the muscular-ideal as being important and goal-worthy Schaefer et al. (2015)— $\alpha = .87$	.89
MBAS (Tylka et al., 2005)	Assesses attitudes related to muscularity and body fat Tylka et al. (2005)— $\alpha = .91$	.95
DMS (McCreary & Sasse, 2000)	Assesses attitudes and behaviors reflecting preoccupation with increasing one's muscularity McCreary and Sasse (2000)— $\alpha = .84$ McCreary, Sasse, Saucier, & Dorsch (2004)— $\alpha = .87$	.91
BAS (Avalos et al., 2005)	Assesses positive body image, including feeling positively toward one's body and accepting and respecting one's body Tylka (2013)— $\alpha = .94$	.96
IES (Tylka, 2006)	Assesses intuitive eating, which reflects a pattern of eating motivated by physiological cues (hunger, satiety) instead of emotional or situational cues Tylka and Homan (2015)— $\alpha = .85$	.91

Abbreviations: BAS, Body Appreciation Scale; DMS, Drive for Muscularity Scale; EAT-26, Eating Attitudes Test-26; IES, Intuitive Eating Scale; MBAS, Male Body Attitudes Scale; OBCS, Objectified Body Consciousness Scale; SATAQ-4, Sociocultural Attitudes Towards Appearance Questionnaire; TREI, Thinness and Restricting Expectancy Inventory.

and the measure in the original study is the inclusion of exercise as a source of obsession given qualitative findings in Björk et al. (2012). Coefficient alphas were .82 (amount of time) and .86 (difficulty stopping thinking).

## 2.4 | Analytic strategy

To test the validity of the operationalization of full recovery in men, analysis of variance (ANOVA) was used, with significant omnibus F-statistics followed-up by Tukey's tests for pairwise comparisons. The alpha used for significance was set at  $p < .05$ , but given that this is an initial exploration of a comprehensive definition of recovery in a small sample of men, we also report trends at the  $p < .01$  level for future investigation in larger samples. As this is a pilot study, no corrections were made for multiple testing. Partial eta squared sizes are reported to assist interpretation: 0.01 = small, 0.06 = medium, and 0.14 = large (Cohen, 1988). For information about specific  $p$  values and effect sizes (Cohen's  $d$ ; 0.2 = small, 0.5 = medium, and 0.8 = large) for the pairwise comparisons, see Table S1.

To examine predictive validity of full recovery, we inspected the contingency table of recovery status groups at baseline and at follow-up about 12 months later.

## 3 | RESULTS

### 3.1 | Recovery groups

Among those with a history of an eating disorder ( $n = 36$ ), 15 currently met DSM-5 criteria for an eating disorder: 20% met criteria for AN, 27% for BN, 7% for BED, and 47% for OSFED. Seven met criteria for partial recovery—physical and behavioral recovery but not cognitive recovery. Five met criteria for full recovery—physical, behavioral, and cognitive recovery. Table 2 displays demographics of these three groups and those with no eating disorder history. There were no significant group differences in terms of age, race, ethnicity, socioeconomic status, BMI, or lifetime history of AN. Of note, nine individuals

with an eating disorder history were not classifiable into one of the a priori recovery status groups; all reported at least one eating disorder behavior in the past 3 months (e.g., one to two binges), and for most at least one EDE-Q subscale was not within 1 SD of norms, but they did not meet criteria for an eating disorder.

### 3.2 | Concurrent validity

Table 3 contains the results from ANOVAs where the independent variable was eating disorder recovery status (eating disorder, partial recovery, full recovery, and no eating disorder history) and the dependent variable was an eating disorder-related construct. Across all constructs, men who met criteria for full recovery did not differ significantly from men with no history of an eating disorder. Although the sample size was small for these comparisons, and thus low power is a possible explanation for nonsignificant findings, visual examination of the mean scores lends credence to those meeting criteria for full recovery not differing from men with no eating disorder history on these eating disorder measures.

Men who met criteria for full recovery displayed significantly less eating disorder concerns than those with a current eating disorder in terms of broad eating pathology (EAT-26), thinness and restricting expectancies, body shame, difficulties in stopping thoughts about body, food, or exercise, and male body attitudes related to muscularity and body fat. At a trend level ( $p < .10$ ), the fully recovered group was lower on thin/low fat internalization than the eating disorder group.

Men who met criteria for full recovery reported significantly less difficulty stopping thoughts related to body, food, and exercise than men who met criteria for partial recovery. At a trend level, the fully recovered group had lower scores on thinness and restricting expectancies and male body attitudes than those partially recovered. Of note, for the constructs with significant F-statistics, but no significant pairwise differences between these two groups, the means were in the expected direction. Given that this pairwise comparison involved very small cell sizes, low power could be an explanation for nonsignificance.

For body acceptance and intuitive eating, which reflect the presence of healthier attitudes/behaviors, men who met criteria for full recovery

**TABLE 2** Comparison of demographics across eating disorder recovery status groups

Demographic variable	Current eating disorder ( $n = 15$ )	Partially recovered ( $n = 7$ )	Fully recovered ( $n = 5$ )	No eating disorder history ( $n = 27$ )	Significance
Age (years)	26.93 (12.68)	22.86 (3.89)	28.40 (9.66)	26.44 (10.08)	$F(3, 50) = 0.35, p = .791, \text{partial } \eta^2 = 0.02$
Race: % White	79.2%	85.7%	60.0%	77.8%	Fisher's exact test = 1.78, $p = .685$
Ethnicity: % Latino	13.3%	0%	20.0%	14.8%	Fisher's exact test = 1.37, $p = .814$
Socioeconomic status (years of highest parental education)	16.53 (2.39)	16.43 (3.15)	15.20 (5.36)	16.96 (2.38)	$F(3, 50) = 0.57, p = .640, \text{partial } \eta^2 = 0.03$
BMI	25.69 (5.57)	25.91 (3.90)	23.81 (4.06)	24.47 (3.64)	$F(3, 50) = 0.48, p = .695, \text{partial } \eta^2 = 0.03$
Lifetime history of AN (%)	53%	43%	60%	n/a	Fisher's exact test = 0.51, $p = 0.999$

Note. Means (SD) or percentiles are presented.

Abbreviations: AN, anorexia nervosa; BMI, body mass index ( $\text{kg}/\text{m}^2$ ).

**TABLE 3** Comparison of disordered eating cognitions and behaviors across eating disorder recovery status groups

Measure/construct	Current ED (n = 15)	Partially recovered (n = 7)	Fully recovered (n = 5)	No ED history controls (n = 27)	Significance	Pairwise comparisons
EAT-26	17.13 (8.03)	11.14 (10.38)	5.00 (3.54)	3.70 (2.49)	F(3, 50) = 17.49, p < .001, partial $\eta^2$ = 0.51	C < PRED, CED FRED < CED
TREI	41.13 (11.53)	30.43 (12.20)	14.40 (3.21)	23.33 (10.83)	F(3, 50) = 11.78, p < .001, partial $\eta^2$ = 0.41	C < CED FRED < PRED (p = .067), CED
Body shame	4.71 (0.96)	4.11 (0.31)	2.95 (1.12)	2.31 (0.98)	F(3, 45) = 21.65, p < .001, partial $\eta^2$ = 0.59	C < PRED, CED FRED < CED
Thin/low fat internalization	4.07 (0.67)	3.23 (0.92)	2.88 (1.03)	2.55 (0.98)	F(3, 50) = 9.28, p < .001, partial $\eta^2$ = 0.36	C < CED FRED < CED (p = .064)
Obsession—amount of time	2.50 (1.00)	2.50 (0.54)	2.15 (0.84)	1.73 (0.43)	F(3, 50) = 5.08, p = .004, partial $\eta^2$ = 0.23	C < PRED, CED
Obsession—difficulty stopping thoughts	2.87 (0.68)	2.96 (0.64)	1.65 (0.78)	1.63 (0.84)	F(3, 50) = 11.65, p < .001, partial $\eta^2$ = 0.41	C < PRED, CED FRED < PRED, CED
Muscular/athletic internalization	3.71 (0.84)	3.71 (0.63)	3.28 (0.95)	3.13 (1.30)	F(3, 50) = 1.13, p = .345, partial $\eta^2$ = 0.06	—
MBAS	3.93 (0.83)	3.85 (0.82)	2.76 (0.57)	2.77 (0.70)	F(3, 50) = 10.24, p < .001, partial $\eta^2$ = 0.38	C < PRED, CED FRED < PRED (p = 0.71), CED
DMS	4.04 (0.88)	3.57 (1.45)	4.15 (1.35)	4.34 (0.96)	F(3, 50) = 1.06, p = .376, partial $\eta^2$ = 0.06	—
Body acceptance	2.76 (0.82)	2.87 (0.61)	3.97 (0.50)	4.06 (0.64)	F(3, 50) = 14.51, p < .001, partial $\eta^2$ = 0.47	C > PRED, CED FRED > PRED, CED
Intuitive eating	2.76 (0.47)	2.71 (0.52)	3.72 (0.36)	3.86 (0.53)	F(3, 50) = 20.68, p < .001, partial $\eta^2$ = 0.55	C > PRED, CED FRED > PRED, CED

Note. Means and SD are presented by group. Body shame comes from the Objectified Body Consciousness Scale. Thin/low fat internalization and muscular/athletic internalization come from the Sociocultural Attitudes Towards Appearance Questionnaire. Body acceptance comes from the Body Acceptance Scale. Intuitive eating comes from the Intuitive Eating Scale. In all cases, higher scores reflect greater levels of the constructs. Pairwise comparisons listed were significant at least at  $p < .05$  unless otherwise noted.  
Abbreviations: C, no eating disorder history controls; CED, current eating disorder; DMS, Drive for Muscularity Scale; EAT-26, Eating Attitudes Test-26; ED, eating disorder; FRED, fully recovered; MBAS, Male Body Attitudes Scale; PRED, partially recovered; TREI, Thinness and Restricting Expectancy Inventory.

did not differ significantly from men with no history of an eating disorder and demonstrated greater body acceptance and intuitive eating than those who met criteria for partial recovery or an eating disorder.

The two constructs for which no overall group differences were found were the measures of drive for muscularity and muscular/athletic internalization.

### 3.3 | Predictive validity

To examine the predictive validity of the full recovery operationalization, we focused on individuals with a history of an eating disorder who were classifiable into a recovery status group at both time points of data collection ( $n = 20$ ).

The change in the distribution across recovery status groups over about 12 months was not significant (Fisher's exact test = 2.59,  $p = .713$ ); we report data here for descriptive purposes. Of the five who were classified into a recovery status group at both time points and met criteria for full recovery at baseline, three (60%) remained fully recovered about 12 months later, one (20%) was classified as partially recovered, and one (20%) met diagnostic criteria for an eating disorder. Of the three who were classified into a recovery status group at both time points and met criteria for partial recovery at baseline, two (67%) were classified as fully recovered at follow-up and one (33%) remained in the partial recovery group. The other four who were classified into the partial recovery group at baseline participated in the follow-up but were not classifiable in an a priori group due to presence of at least one eating disorder behavior in the past 3 months. Of the 12 who were classified into a recovery status group at both time points and met criteria for an eating disorder at baseline, 5 (42%) were classified as fully recovered at follow-up, 2 (17%) were classified as partially recovered, and 5 (42%) continued to meet diagnostic criteria for an eating disorder. The other three who met criteria for an eating disorder at baseline did not participate in the follow-up.

## 4 | DISCUSSION

To our knowledge, this pilot study is the first application of a comprehensive definition of eating disorder recovery (physical, behavioral, and cognitive recovery) to focus on men. Of note, this was a definition developed by researchers, although it was informed both by the multidimensionality of diagnostic criteria and qualitative data from those with eating disorders. Using this definition, men who met criteria for full recovery were indistinguishable from men without an eating disorder history on a wide range of measures of eating disorder attitudes/behaviors not used in the operationalization of recovery. Further, those who met criteria for full recovery endorsed less disordered eating than those with a current eating disorder on broad eating pathology (EAT-26), thinness and restricting expectancies, body shame, difficulties in stopping thoughts about body, food, or exercise, and male body attitudes related to muscularity and body fat, and had less difficulty stopping eating disorder thoughts than those who met criteria for partial recovery. In contrast, men who met criteria for

partial recovery (physical and behavioral but not cognitive) did not differ significantly from those with an eating disorder on these constructs. Interestingly, the distinction between those in full recovery and those in partial recovery was not as robust as in research with women (Bardone-Cone et al., 2010). Inspection of the pattern of means suggests that this is more likely due to the small pilot sample size (pairwise comparisons involving  $n = 7$  and  $n = 5$ ) than an indication of a need for a more nuanced definition, but future research with larger sizes is needed to test this. Although these conclusions are tentative given the small sample size, the findings from this pilot study provide reason to continue to explore the concept of comprehensive recovery (including a cognitive component) among men.

The findings related to body acceptance and intuitive eating were encouraging since this demonstrated that men who met criteria for full recovery did not just have the *absence* of disordered eating attitudes/behaviors but also the *presence* of adaptive, healthy attitudes toward one's body and eating, in contrast to those who met criteria for partial recovery or an eating disorder. As with other eating disorder constructs, men who met criteria for full recovery were indistinguishable from those with no eating disorder history on body acceptance and intuitive eating.

No significant group differences emerged across the three eating disorder history groups and the men with no eating disorder history for muscularity (drive for muscularity, internalization of a muscular ideal). As muscularity is tied to male gender role expectations, these results suggest that pressure related to being muscular applies broadly and is present irrespective of eating disorder history or stage of recovery. The finding of group differences on the measure of male body attitudes may be explained by this measure assessing attitudes related to both muscularity and low body fat rather than only muscularity.

In terms of predictive validity, of men who met criteria for full recovery at baseline, 60% also met criteria for full recovery about 12 months later. This percentage was not as high as the percentage in a sample of women assessed 7–8 years after baseline (80%) (Bardone-Cone et al., 2019). The differing percentiles could be due to the difference in the length of follow-up or differential degrees of stability of recovery by gender.

Strengths of this study include the focus on men, the application of a comprehensive definition of recovery, and the preliminary look at predictive validity. The small sample size was a limitation, particularly in the longitudinal examination and when examining pairwise comparisons between the fully and partially recovered groups. Another limitation comes from the lack of well-established norms for men on the EDE-Q. The norms used in the current study (Quick & Byrd-Bredbenner, 2013) were not reported by age band, so we could not use age-matched community norms. EDE-Q norms by age bands in men have been reported (Hilbert, de Zwaan, & Braehler, 2012); however, these German norms are much lower compared with norms in U.S. samples. This discrepancy highlights possible elevated variability in norms for disordered eating cognitions among men across countries/cultures. Lastly, we note that this work focuses on how men fit into a priori recovery categories developed by researchers; it

will be important for future research to examine who self-identifies as recovered and how that maps onto research-derived definitions.

We consider this examination of physical, behavioral, and cognitive recovery in men an important first step, but future research should consider whether an operationalization tailored to men would be more powerful. Compared with women with eating disorders, men have lower drive for thinness and shape and weight concern but higher drive for muscularity (Fernández-Aranda et al., 2004; Murray et al., 2017; Núñez-Navarro et al., 2012) and are less likely to engage in vomiting and more likely to engage in excessive exercise (Hay, Loukas, & Philpott, 2005; Strother, Lemberg, Stanford, & Turberville, 2012). Perhaps absence of excessive exercise and within normative levels of muscularity-oriented body image concerns should be required for behavioral recovery and cognitive recovery, respectively (Lavender, Brown, & Murray, 2017). Tests of tailored operationalizations of recovery will be important to examine if they provide incremental validity over the operationalization tested in this pilot study.

Longitudinal research with larger samples and data collection at multiple time points is recommended to illuminate the process of recovery and explore predictors of full recovery. Examining eating disorder recovery in prominent subsets of men with eating disorders, including athletes (e.g., wrestlers) and gay men, should also be considered. For example, given the overrepresentation gay men with eating disorders (Carlat, Camargo, & Herzog, 1997; Olivardia, Pope, Mangweth, & Hudson, 1995), research should examine what particular factors may help gay men achieve full recovery, such as a targeted focus on body dissatisfaction, as gay men have elevated body image concerns (Morrison, Morrison, & Sager, 2004).

A significant clinical implication is that men with an eating disorder history can meet the strict criteria laid out for full recovery; this is encouraging. The question remains of what predicts full recovery and whether it is attainable by all. In their treatment outcome study, Agüera et al. (2017) found that persistence predicted absence of diagnostic criteria in men and may also be a key ingredient in moving from partial recovery to full recovery. Of note, in their qualitative research of men who identify as recovered, Björk et al. (2012) reported that some men described lingering impulses related to exercise or diet, while others described feeling “totally free” from their eating disorder, the latter characterizing full recovery.

Given that a cognitive component appears to be important to conceptualizing recovery among men, treatment outcome research should ensure the use of a comprehensive definition of recovery. The recent development of a questionnaire intended to provide a standardized and comprehensive approach to recovery may be promising as an efficient assessment approach (Bachner-Melman, Lev-Ari, Zohar, & Lev, 2018). Using data collected from individuals with an eating disorder history, family members of those with an eating disorder, and clinicians working with people with eating disorders, the two factors identified as most salient to recovery were lack of symptomatic behavior and acceptance of self and body. However, more men with an eating disorder are needed to validate this questionnaire in men.

In conclusion, a comprehensive definition of recovery (physical, behavioral, and cognitive) developed and validated in a sample of

women (Bardone-Cone et al., 2010) seems to also apply to men. These findings underscore that limiting the definition of recovery to the physical and behavioral domains yields a heterogeneous group and that incorporating cognitive recovery has added value. It is important to note that men's eating disorders are underdiagnosed and untreated for reasons related to internalized stigma, perceived incongruence of seeking psychological help with masculinity, and potential bias from health care providers (Greenberg & Schoen, 2008; Griffiths et al., 2015; Strother et al., 2012). Thus, as work continues on understanding recovery in men, recruitment will need to extend beyond eating disorder treatment centers to more fully capture the community of men experiencing eating disorders.

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## SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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