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The Eating Disorders Examination in Adolescent Males with Anorexia Nervosa: How Does It Compare to Adolescent Females?

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Abstract

Objective—The study aimed to explore the Eating Disorder Examination (EDE) for adolescent males with eating disorders (EDs) compared with adolescent females with EDs.

Method—Data were collected from 48 males and matched on percent median body weight (MBW) and age to 48 females at two sites.

Results—Adolescent males with anorexia nervosa-type presentation scored significantly lower than matched females on *Shape Concern*, *Weight Concern*, and Global score. They also scored lower on a number of individual items.

Discussion—The EDE has clinical utility with adolescent males with anorexic-type presentation although males' scoring ranges are consistently lower than those from adolescent females with similar clinical presentations. Males scored significantly lower on a number of items representing core symptoms such as desire to lose weight. More research is needed to gain a better understanding of the experience of adolescent males with EDs, particularly in relation to the nature of shape concern.

Introduction

Few psychiatric disorders have as skewed a gender distribution as eating disorders (ED). Nevertheless, recent estimates suggest that up to one in four clinic presentations of early onset ED cases are male.[1] Yet surprisingly little attention has been paid to EDs in adolescent males in the literature. The few reports on males that do exist focus on small clinical samples of adults and have concluded that males and females with EDs are broadly similar in terms of clinical presentation e.g. Ref. [2–4] However, there is speculation that the nature of body image disturbance is qualitatively different with adolescent males being less concerned with precise weights or clothing size and more concerned with attaining an idealized masculine shape.[5] Whereas EDs in adolescent girls are almost always organized around a desire to be thinner, it has been estimated that about half of males with EDs have a desire to

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be bigger.[6] Though differences in symptom expression are rarely explored in clinical comparison studies.

Focusing on diagnostic criteria alone as a basis for comparison to female cases is problematic because around two-thirds of adolescents presenting for ED treatment demonstrate a wide heterogeneity of symptoms that meet criteria for eating disorder not otherwise specified (EDNOS).[7,8] Likewise, comparing males and females on paper-and-pencil assessments is also problematic because most measures of ED-specific psychopathology that are being used in clinical practice and research were developed and normed for female samples. We cannot be sure that these measures are reliable among males, nor of what level of psychopathology the scoring ranges represent. One study investigating the comparability of the Eating Disorders Inventory-2 (EDI-2[9]) between men and women demonstrated that women scored significantly higher than men on drive for thinness and body dissatisfaction[3] and a comparison of the measure between college-aged males and females found that the measure was generally less reliable for men.[10] Subtle differences that arise when comparing measures can sometimes provide insight into the phenomenology of the disorders in males. For example, one report comparing adolescent males with AN to healthy controls found that the Perfectionism and Maturity Fears subscales of the EDI-2 did not distinguish between the two groups suggesting that these common features of AN in females, are not part of the disorder in males.[11]

The Eating Disorders Examination (EDE-12)[12] is often considered the gold standard for research and clinical practice[13] and yet, remarkably little attention has been paid to the comparability of the EDE between males and females. As such, it is particularly important to investigate gender differences in the EDE's reliability as well as comparability. In addition, it is critical to examine these differences in an adolescent population because EDs typically onset during this period and early detection is key in order to prevent some of the more harmful medical sequelae of symptoms during this key developmental period.[14]

Here, we aim first, to explore the usefulness of the EDE when administered to adolescent males by examining its internal reliability and comparing EDE scores among adolescent males and females. Second, the study aims to provide preliminary normative data on the EDE for adolescent males with AN. Finally, the study will compare endorsement of individual items on the EDE among adolescent ED males and females as a means of exploring the expression of AN in adolescent males.

Method

Participants Recruitment

All adolescent males who presented for treatment at Stanford University Hospital and Clinics and at the University of Chicago were selected for inclusion in the study. All participants were diagnosed with AN, or fulfilled inclusion criteria for clinical trials for the treatment of AN. Patients were diagnosed after extensive clinical assessments during intakes by experts in eating disorders in children and adolescents. The EDE was administered by trained investigators not involved in treatment or direct evaluation. All studies from which data were drawn were reviewed and accepted by the Institutional Review Boards of Stanford University and the University of Chicago.[15–17] There were no significant differences between males and females on any demographic variable (see Table 1) or on binge/purge symptoms which the exception of vomiting which was significantly more commonly reported by males.

Measures

Eating Disorders Examination—The EDE[18] is a standardized interview assessment that measures the frequency and severity of key behavioral (e.g., binge-eating and purging) and cognitive symptoms (e.g., fear of weight gain) over the prior 28-day period across four subscales; Dietary Restraint, Eating Concern, Shape Concern, and Weight Concern.

Statistical Analyses

Data were collected on 48 adolescent males and 48 adolescent females at two sites—Stanford University and the University of Chicago and included both study and clinical patients. Data from Stanford came from adolescents enrolled in three published[15–17] and two ongoing ED studies: Two studies focused only on AN, and three for EDs (two ongoing). Data from the University of Chicago came from one study for AN[17] and clinic patients. Male-female pairs were matched within source (i.e., clinic or study) and site (Stanford or Chicago) to ensure recruitment was the same for both groups; and then on percent median body weight (% MBW; based on Center for Disease Control charts) and age (in months).

To examine internal reliability, Cronbach's alphas were explored by sex. To examine comparability of the EDE, we conducted matched-pair comparisons on global and subscale scores. Finally, we conducted item-by-item matched-pair comparisons to explore the phenomenology of symptoms in males. Given that data were not normally distributed, all matched-pair comparisons were checked using Wilcoxon signed rank tests. To guard against Type 1 error, we used a Holm-modified Bonferroni procedure.

Results

Internal Consistency

Cronbach's alphas for the total measure were above the acceptability threshold for internal consistency[19] for both males (0.93) and females (0.95), and the subscales ranged from 0.66 to 0.86; and from 0.84 to 0.95, respectively (see Table 2). Examination of the item loadings revealed that the Empty Stomach item was typically not endorsed by males, and deletion of this item would lead to an increase of the Cronbach's alpha for the Dietary Restraint subscale from 0.68 to 0.74. No individual item in the Eating Concern subscale would lead to an increase of the alpha above 0.7 in males.

Matched Pair Comparisons

Adolescent males with AN scored significantly lower on Shape Concern and Weight Concern, and on the EDE Global Score than their female comparisons, with effect sizes in the low to moderate range (see Table 2). On items, they scored significantly lower on Empty Stomach; Social Eating; Eating in Secret; Flat stomach; and Desire to Lose Weight, with effect sizes in the moderate range.

Discussion

Overall, the EDE appears to be acceptable for use with adolescent males with two important caveats. First, we found the measure to be slightly less reliable among adolescent males, a trend observed in another study that found lower internal reliability for males compared to adult females on the EDI[9,10] and suggests that males may be less consistent in their responses on these measures than females. It may be that certain questions reflect symptoms that are not part of the ED symptom profile for males. Empty Stomach appears to be one such item it should not be included in the interview for males. However, overall internal reliability was acceptable. Second, current scoring ranges derived from female samples bear little resemblance to those of males with similar clinical presentations. Adolescent males

with AN scored significantly lower than adolescent females on Shape Concern and Weight Concern and on Global EDE score. A similar trend has also been observed on other measures.[3] Strober et al. similarly found that, at presentation, adolescent males with AN (n = 14) scored significantly lower than girls (n = 85) on Weight Concern. However they did not find evidence of a significant difference on any other subscale and global EDE score was not reported.[20]

Males tended not to endorse the Empty Stomach, Social Eating, Eating in Secret, Flat Stomach and Desire to Lose Weight items. The difference in desire to lose weight is particularly noteworthy because this item reflects one of the hallmark features of AN.[21]

Since no published norms are available on the EDE for adolescent males, interpretations of these data deserve caution. There are a number of possibilities that nonetheless deserve preliminary discussion. Adolescent males may engage in greater minimization of symptoms than females, especially in relation to questions about weight control, perhaps because there are fewer social constructions around weight ideals for males. The observed differences on social eating and eating in secret may also reflect the greater amount of socialization that females are subjected to in terms of eating habits.[22] It is also possible that weight concerns are not as prevalent a feature of AN for adolescent males. This is consistent with the proposal that adolescent males with EDs are less concerned with specific weight and more concerned with attaining an idealized masculine shape.[5,23] If this is the case, the fact that AN males scored significantly lower than females on Shape Concern in this study may indicate that the quality of shape concern experienced by males differs than that measured by the EDE, thus resulting in lower scores on this EDE subscale. Indeed, males scored significantly lower than females on the only item that assesses a specific area of body shape (flat stomach). One previous study which compared male adolescents with AN to healthy controls found that while both groups overestimated all parts of their bodies, males with AN presented a greater overestimation of shoulders, hips and thighs,[11] whereas a similar analysis in AN adolescent females found that they demonstrated greater overestimation of thorax, waist and hips, than controls.[24]

It seems reasonable that the specific psychological concerns of adolescent males are somewhat different to those of females despite presenting a similar clinical picture. The EDE may not be as sensitive to the specific expression of shape concern and perhaps other concerns, presented by males. For example, in concert with current theory around males' drive for muscularity, it may be that they desire a muscular, "six-pack" stomach, and thus do not endorse a desire for a flat stomach.

Further exploration into the nature of males' shape and other ED-related pathology is needed. Normative data are also urgently required, as it is possible and even likely that while ED male scores on the EDE are less than ED females, that they are still much higher than non-ED males. Qualitative interview data could also provide some rich insights into how males experience ED. The addition of male-specific items could enhance the usefulness and reliability of the EDE and other measures. In the mean time, a more accurate picture of symptomatology in adolescent males could be gleaned by adding another informant on the interview, shown to be important with adolescent female AN patients who often minimize their symptoms,[16] as well as adding measures of comorbidity such as depression or anxiety.

That significantly more males than females reported self-induced vomiting is consistent with a recent study of DSM-IV symptoms in a large non-clinical sample of adolescents.[25] Only 27 (56%) participants met the weight cut-off suggested by the DSM-IV. Similarly, only 38% of Madden et al.'s[1] nationally representative sample fulfilled full diagnostic criteria while 51% were below the suggested weight cut off, despite 61% having potentially life

threatening complications, highlighting the limitation of this criterion when applied to children and adolescents, for whom medical sequelae can occur at a much higher weight.

Limitations of the study include the lack of BN and EDNOS participants. However, this is still the largest sample size of ED adolescent males published to date. Future research should include a healthy comparison group to allow for a comprehensive analysis of the specificity of the measure.

In general, the EDE appears to have clinical utility with adolescent males with AN, though there is room for improvement. There is a great need for the development of norms for all ED diagnostic groups of males. We suggest mixed methods studies of the expression of symptoms in males using qualitative data and the incorporation of additional quantitative measures, especially of shape concerns, to investigate concurrent validity and to get a more accurate picture of the phenomenology of EDs in adolescent males - an area that continues to be under-explored.

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TABLE 1

Demographic information and percentages reporting binge/purge symptoms for the male and female groups

	Male	**Female**		
	Mean (SD)	**Mean (SD)**	***t***	***p***
% MBW	83.54 (7.34)	83.94 (6.63)	0.822	0.416
Age (months)	191.09 (28.32)	185.44 (28.94)	1.877	0.070
Age (years)	15.92 (2.36)	15.45 (2.41)	1.877	0.070
BMI	17.04 (1.59)	16.84 (1.42)	1.643	0.108
Illness duration (months)	12.50 (18.39)	15.19 (17.43)	0.667	0.509
	%	%	χ^2	
Non-Caucasian	25.0	31.4	0.347	0.556
Objective binge eating episodes	12.5	18.8	0.711	0.399
Subjective binge eating episodes	25.0	29.2	0.211	0.646
Vomiting	27.1	10.4	4.37	0.036*
Laxatives	0	4.2	1.19	0.274
Diuretics	0	4.2	2.04	0.153

*Significant at $p < 0.05$ level; MBW, mean body weight; BMI, body mass index.

TABLE 2

Subscale and item matched pair comparisons and Cronbach's Alphas for the Eating Disorders Examination for the entire sample

		Male		Female				
Subscale	**Item**	**Mean (SD)**	**α**	**Mean (SD)**	**α**	***t***	***p* .172**	**Effect Size**
Dietary restraint		1.82 (1.17)	0.689	2.24 (1.52)	0.841	1.387		
	Restraint over eating	2.52 (2.45)		3.15 (2.78)		1.262	.213	
	Avoidance of eating	.54 (1.24)		.88 (1.48)		1.226	.226	
	Food avoidance	3.00 (2.67)		2.88 (2.54)		0.257	.798	
	Dietary rules	2.54 (2.65)		2.63 (2.88)		0.163	.871	
	Empty stomach	.50 (1.46)		1.67 (2.28)		3.486	.001**	.50
Eating concern		.95 (1.17)	0.661	1.46 (1.52)	0.802	1.802	.078	
	Preoccupation with food	1.19 (2.18)		1.56 (2.23)		0.932	.356	
	Fear of losing control over eating	1.27 (2.11)		1.44 (2.18)		0.410	.684	
	Social eating	.87 (1.60)		1.74 (2.17)		2.402	.020*	.35
	Eating in secret	.15 (.88)		.60 (1.23)		2.022	.049*	
	Guilt about eating	1.19 (1.90)		1.85 (2.17)		1.456	.152	
Shape concern		1.76 (1.60)	0.863	2.47 (1.91)	0.903	2.047	.046*	.29
	Flat stomach	2.13 (2.63)		3.38 (2.79)		2.402	0.020*	0.35
	Importance of shape	2.60 (1.99)		3.15 (2.04)		1.338	0.187	
	Preoccupation with shape	.88 (1.97)		1.38 (2.11)		1.228	0.226	
	Dissatisfaction with shape	1.58 (2.14)		2.33 (2.35)		1.659	0.104	
	Fear of weight gain	2.42 (2.65)		2.85 (2.82)		0.888	0.379	
	Discomfort seeing body	1.58 (2.17)		2.04 (2.06)		1.026	0.310	
	Discomfort exposing body	1.44 (2.09)		2.25 (2.20)		1.946	0.058	
	Feelings of fat	1.46 (2.18)		2.35 (2.60)		1.925	0.060	
Weight concern		1.52 (1.58)	0.862	2.32 (1.78)	0.860	2.503	0.016**	0.38
	Importance of weight	2.21 (1.92)		2.69 (2.06)		1.220	0.229	
	Reaction to prescribed weighing	2.07 (2.34)		2.59 (2.26)		1.390	0.171	
	Dissatisfaction with weight	1.33 (1.98)		2.00 (2.16)		1.736	0.089	
	Desire to lose weight	1.19 (2.01)		2.32 (2.72)		2.452	0.018*	

		Male		Female				
Subscale	**Item**	**Mean (SD)**	**α**	**Mean (SD)**	**α**	***t***	***p* .172**	**Effect Size**
Global score		1.48 (1.28)	0.930	2.23 (1.60)	0.955	2.660	0.011**	0.40

*Significant at $p < .05$ level;

**Significant after Bonferroni adjustment.