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DSM-5 Unspecified Feeding and Eating Disorders in adolescents:

What do they look like and are they clinically significant?

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ABSTRACT

Objective: The recent DSM-5 categorization of eating disorders introduces a new category of eating disorders, Unspecified Feeding and Eating Disorders (UFED), where symptoms do not meet criteria for any other diagnostic category, but cause clinically significant distress or impairment. The aim of the current study was to explore what disorders in UFED might look like in an adolescent population.

Method: We examined a large cohort of adolescent female twins (N=699) who were assessed on three occasions and who did not meet a DSM-5 eating disorder diagnosis but who reported threshold levels of either fasting and/or driven exercise (N=33; 4.7%). This group of girls was compared to girls who reported no eating disorder over the three waves, and girls who met a diagnosis of either anorexia nervosa (AN) or atypical AN.

Results: The UFED group was characterized as being in the overweight range while striving to lose weight, and placing a high degree of importance on weight and shape in their self-evaluation. This group was indistinguishable from the two eating disorder groups on measures of global eating disorder severity, and demonstrated significantly elevated impairment and distress compared to the no eating disorder group commensurate with the eating disorder groups.

Discussion: Further research of this group is necessary to ensure that these individuals are not overlooked, and that treatment options are appropriate and available.

Key words: DSM-5, impairment, adolescents, UFED

Changes to the classification of eating disorders in the DSM-5¹ have sought to reduce the prevalence of the residual category, eating disorder not otherwise specified (EDNOS). Criteria for the existing threshold disorders, anorexia nervosa (AN) and bulimia nervosa (BN), have been relaxed and binge eating disorder (BED) has been introduced as a threshold disorder. In addition, the EDNOS category itself has been replaced, containing specified disorders within the Other Specified Feeding and Eating Disorders (OSFED) category, including atypical AN (A-AN), low frequency or limited duration BN and BED, purging disorder, and night-eating syndrome. While not impacting on the residual category, feeding disorders has also been moved to form a “feeding and eating disorders” group, including pica, rumination disorder and avoidant/restrictive food intake disorder. This increased heterogeneity allows for greater understanding of clinical presentation and informing treatment options.²

However, a further category of feeding and eating disorder now exists in the DSM-5 called Unspecified Feeding and Eating Disorders (UFED), for cases where there is insufficient information available to make a diagnosis, or where symptoms do not meet criteria for any other diagnostic category, but “cause clinically significant distress or impairment in social, occupational, or other important areas of functioning”.¹ One study suggests a significant proportion of individuals in this diagnostic group, around 16% of all people with an eating disorder.³ While research has demonstrated that there is no meaningful difference in impairment associated with the threshold disorders and those in the OSFED category,⁴ to date no studies have investigated the specific nature of the UFED category and the impairment associated with this group.

The increased specificity of the OFSED diagnoses may have created a distinctive group through elimination if not intent. Engagement in bingeing and /or purging behaviors will result in

a specific diagnosis of a threshold eating disorder or OFSED, dependent on the frequency and duration of these behaviors, whereas the use of fasting and driven exercise to control weight and shape are associated with threshold eating disorders and OFSED only if they are also accompanied by bingeing, purging or significant weight loss. However, there remains a group of individuals whose self-evaluation is unduly based on their shape and weight, who engage in threshold levels of fasting and driven exercise in the absence of threshold levels of bingeing or purging, but are not underweight or experiencing any significant weight loss from their activities. It is these individuals who may make up part of the UFED grouping.

In adults, the evidence regarding the impairment associated with non-purging compensatory behaviors is conflicting. Excessive exercise has been associated with higher levels of anxiety and depression in mixed threshold eating disorders⁵ and fasting is a stronger predictor of depression than purging behaviors in women with BN.⁶ On the other hand, Garfinkel and colleagues⁷ reported that individuals with purging subtype BN reported higher levels of comorbid depression, anxiety, and alcohol dependence than those with non-purging BN. More recent research on compensatory eating disorders in adults, defined as the use of driven exercise and/or fasting in the absence of objective binge episodes,⁸ suggests that these people experience significantly greater body image disturbance, disordered eating, anxiety proneness and perfectionism than healthy controls while being significantly lower on most of these variables than a BN comparator group. In a large community sample Mond and colleagues⁹ found no significant differences between women who binged and engaged in non-purging compensation (dietary restriction and excessive exercise) versus purging behaviors but only dietary restriction predicted increased functional impairment whereas excessive exercise was significantly associated with lower levels of impairment. Excessive exercise in a community sample was

associated with elevated eating disorder psychopathology when it was intended solely to influence weight and shape, and when its postponement is accompanied by intense guilt.^{10,11}

However, young people up to the age of 18 years rely significantly more on the use of fasting and driven exercise as compensatory behaviors than adults.^{12,13} Exercise is the most frequently used behavior in children and adolescents with a mean age of 14.9 years,¹⁴ and in 13-year olds, 27% of girls and 23% of boys engaged in exercise for weight loss, with 26% and 15% respectively engaged in food restriction for weight loss over a 3-month period.¹⁵ Driven exercise is associated with greater eating disorder and depressive psychopathology in young adolescents with eating disorders,¹⁶ and it has been proposed that exercise may be a gateway behavior that leads to the utilization of additional compensatory behaviors.¹⁷

Therefore the current study examines use of fasting and driven exercise in the absence of other eating disorder behaviors in an adolescent population of female twins who were interviewed with respect to their eating on 3 occasions over the ages of 12.70 to 19.84 years. Given the changes that take place over adolescence in eating disorder status,¹³ we examined lifetime diagnostic status *across* the 3 waves of assessment in order to more confidently allocate diagnostic status. We identified those girls who were not found not to meet DSM-5 diagnostic criteria for threshold eating disorders or OFSED across the three waves,⁴ but did have threshold fasting or driven exercise behaviors over this time. Our first aim was to examine this latter group in terms of the prevalence of these behaviors and association with cognitive symptoms. The second aim was to examine the degree of clinically significant distress or impairment associated with these disorders by the use of two eating disorder comparator groups, AN and A-AN, and a comparator group of healthy girls who showed no evidence of disordered eating over the duration of the study.

METHOD

Participants

The current study utilizes three waves of data from 699 adolescent female twins, described previously.^{4,18,19} Female-female twin pairs registered with the Australian Twin Registry (ATR) aged between 12 and 15 years and their parents were approached to participate in the present study by the ATR. Of the 719 families approached, 411 (57.2%) agreed to participate, 237 (32.9%) said no, and 71 (9.9%) did not reply. Families were then approached by the researchers with self-report questionnaires sent to both parents, including those families where the parents did not live together. When questionnaires were returned from the parents, the Eating Disorder Examination (EDE²⁰) was conducted over the telephone with the twins, at separate times and with a different interviewer for each child in the family. At Waves 2 and 3 all twins, responders and non-responders, were approached. The mean duration of time between Waves 1–2, and Waves 1–3 was 1.15 years ($SD=0.17$) and 2.96 years ($SD=0.27$) respectively (range=1.91-4.65 years), over which time the ages ranged from 12.70 to 19.84 years. The mean age at each wave was 13.96, 15.10, and 16.90 years. The sample was Caucasian and the socioeconomic indexes for areas (SEIFA) in Australia, a standardized measure of socioeconomic status with a mean of 100 ($SD=15$) using an amalgam of parental occupation, education (years of school) and income from 2006 census data related to the postcode of primary residence²¹ was 101.14 with a SD of 11.36.

Previous reports⁴ identified that 5.4% met DSM-5 threshold disorders (i.e., AN, BN, BED) and 5% met DSM-5 OSFED across the three waves, where the groups were non-overlapping and defined by diagnostic “trumping” in the following order: AN, BN, BED, A-AN,

low frequency or limited duration BN, low frequency or limited duration BED, purging disorder. The Flinders University Clinical Research Ethics Committee approved the data collection process and written informed consent from parents and written assent from the twins was obtained after the procedures had been fully explained.

Procedure

The twins were interviewed via telephone at each of the three waves. The interview consisted of two parts for Wave 1 and 2, where the first utilized the EDE²⁰, and the second constituted questions from self-report questionnaires assessing a range of variables including life events, temperament, and family functioning.^{22,23} Wave 3, however, involved only the EDE interview, while the other measures were undertaken online. Postgraduate Clinical Psychology trainees (n=16) who had been trained in use of the EDE conducted the interviews.

Diagnostic Assessment

The EDE provides diagnostic information relating to the prior 3-month period, and was supplemented with lifetime questions for the purpose of this study, including the age range during which each diagnostic criterion was met (to assess the co-occurrence of features). Previous work with the current population identifies the EDE as possessing high inter-rater reliability, good internal reliability, equivalency and stability of the combined weight and shape concern subscale over increasing age.¹⁹ The criteria for defining the different DSM-5 threshold eating disorders and the disorders in OSFED and the prevalence of these disorders have been published previously, displaying high inter-rater reliability.⁴

UFED cases were identified as being present when (i) the DSM-5 diagnosis for AN, BN, BED, or OSFED were *not* met over any of the three waves of assessment, and (ii) driven

exercising or fasting were present at any of the waves of assessment. Driven exercising was assessed using a 3-month and lifetime version of the driven exercise question in the EDE and was categorized as being present if it occurred for at least an hour 5 days a week for a 3-month period with no breaks of more than 2 weeks. Questions were asked separately for competitive sport and other forms of exercise, where only exercise for weight or shape reasons was included and exercise for fitness or recreation was excluded. Fasting was assessed using a 3-month and lifetime version of the “avoidance of eating” question from the EDE. The threshold criterion was met if the person had gone for 8 or more waking hours without eating anything in order to influence shape or weight on more than half the days each week for a 3-month period. The presence of either or both of these behaviors was termed “restrictive and/or exercise disorders” (RED). Participants who did not meet criteria for threshold disorders, OSFED or UFED were allocated to the “no eating disorder” group.

Assessing clinically significant distress or impairment

Given we had no direct measures of the impairment and distress caused by fasting and driven exercise we used proxy indicators of clinically significant distress or impairment that is required as part of the UFED categorization. This included a variety of self-report measures²⁴⁻³¹ from across the waves summarized in **Table 1**.

Statistical Analysis

The two aims were addressed by comparing four groups (no disorder, AN, A-AN and RED) diagnosed *across* the three waves. In order to address our first aim relating to the prevalence and description of RED, we: (1) examined eating disorder cognitions co-occurring with the RED behaviors, and (2) compared diagnostic criteria for AN across the four groups in

the previous 3-month period *regardless* of current diagnostic status. The second aim relating to the degree of clinically significant distress or impairment associated with RED was addressed by comparing the four groups with respect to our proxy indicators of distress and impairment. All group comparisons were conducted using linear mixed modeling (LMM) in SPSS as the twin data contains correlated observations and the assumption of independent sampling was violated and LMM corrects for this. In all the analyses related to group comparisons, the *p* value was corrected for multiple testing within each wave of data.

RESULTS

Prevalence and description

Across all waves, 33 people (4.7%) were assessed as meeting the criteria for fasting or driven exercise and did not meet criteria for any other DSM-5 eating disorder. In total, 46 participants met criteria for RED at some stage over the 3 waves of assessment, but 13 (28%) were also assessed as having a DSM-5 disorder at some stage over the 3 waves of assessment: AN (N=2), BN (N=2), BED (N=1), A-AN (N=2), low frequency or limited duration BN (N=5), purging disorder (N=1). Of the people meeting criteria for RED, 13 first reported the behaviors at Wave 1, 11 at Wave 2, and 9 at Wave 3. The use of driven exercise alone for weight or shape control was reported by 22 people, 5 reported the use of fasting alone, and 6 reported both driven exercise and fasting: therefore 85% of the group utilized driven exercise. **Table 2** reports the age commenced and duration of the driven exercise at each wave. Across the three waves of data, out of 33 participants who were classified as having RED, 3 (9%) had experienced objective binge episodes (no more than 2 episodes in a month lasting less than 3 months), with one of these also experiencing self-induced vomiting at threshold levels for 1 month, and 1 further person

reporting 6 episodes of self-induced vomiting over one month. Therefore, in all, 12% of the UFED group had briefly experienced either subthreshold objective binge episodes and/or self-induced vomiting. Subjective binge episodes were only assessed over the previous 3-month period and only 1 person met threshold criteria (12 or more in a 3 month period) across the different assessments.

Table 3 reports the cognitive symptoms utilized in defining DSM-5 eating disorders present at the time of the behaviors for the RED group. The most commonly reported symptoms were importance of weight and trying to avoid weight gain or attempting to lose weight, in over half the sample. **Table 4** reports the levels of severity of the diagnostic criteria for AN reported in the 3-month period prior to interview at each wave, regardless of the presence of the disorder, in addition to the global EDE score. It can be seen that the global EDE score was significantly elevated for the RED group compared to controls at each wave but that there was no difference in BMI centile between the two groups. At each wave, the RED group had the highest BMI centile, but this was only significantly higher than the AN group at Wave 1. Importance of weight in the RED group was significantly higher than the no disorder group and comparable to the A-AN group at Wave 1. Importance of shape and feelings of fatness were significantly higher in the RED group than the no disorder group at Waves 1 and 2 and across all three waves respectively, and comparable to either the AN and/or A-AN groups. Fear of weight gain was not significantly different between the RED and no disorder groups at any wave but neither did either of the eating disorder groups differ from the no disorder groups at two of the three waves.

Clinically significant distress or impairment

Comparisons of distress or impairment across the groups summarized in **Table 5** generally indicated that the RED group had significantly elevated distress compared to the no

disorder group and commensurate with the other two eating disorder groups. Of the 11 variables examined, there was only one exception where no differences were indicated between the no disorder and RED groups, for interoceptive awareness. Additionally, body dissatisfaction, obsessiveness, and ineffectiveness were elevated in the RED group only compared to controls. Peer teasing about weight, measured at Waves 1 and 2, was significantly higher than the no disorder group for both the AN and RED groups at both waves.

DISCUSSION

The general aim of this investigation was to try to “flesh out” the appearance of UFED in DSM-5, by examining one group within this category we refer to as having Restricting and Exercise Disorder (RED). Across all three waves of data, 4.7% of the participants met criteria for RED and did not meet criteria for any other DSM-5 eating disorder, representing the largest DSM-5 diagnostic group in this sample, 31% of all those adolescents given a DSM-5 disorder in this sample.⁴ In terms of describing RED beyond the presence of behaviors, we observe that it can commence at any time over adolescence and is not of insignificant duration, ranging from 3 months (the specified lower bound required for inclusion) to 111 months (9 years) with a mean duration of almost 2 years when assessing the twins at the third wave of data collection. Our assessment of RED was less thorough than the other DSM-5 eating disorders, where co-occurrence of cognitive symptoms with fasting or driven exercise unaccompanied by other eating behaviors was not adequately flagged in the interview, and thus did not always get assessed. However where it was assessed, we note that in contrast to a previous report of young adults,⁹ we did not find that the presence of subjective binge eating was common in adolescents with fasting and/or driven exercise. Across the descriptors there is a general impression that RED consists of

girls who tend to be in the overweight range and feel fat, place a high degree of importance on weight and shape in the way that they judge their self-worth, who put a lot of effort into trying to reduce or not gain weight, and who experience a high degree of global eating disorder severity. This latter indicator is particularly important, as the RED group were significantly higher than the healthy girls but indistinguishable from the other two eating disorder groups related to AN on a measure which is typically used as the primary indicator of outcome in treatment trials of eating disorders, both AN and BN, in children and adults.³³⁻³⁶ Over the first two waves the global EDE score for the RED group was also commensurate with that of adolescents with no compensatory behaviors referred to an eating disorder treatment program.¹³

The second aim addressed the degree to which the RED group could be distinguished in terms of our proxy indicators of clinically significant distress or impairment. The RED group experienced significantly elevated impairment or distress compared to the no eating disorder group on ten of eleven (91%) of our indicators. Additionally, on 6 indicators the A-AN group was intermediate between the control and RED groups, indicating that the RED group had higher levels of impairment. Overall these results suggest that RED causes clinically significant distress or impairment in important areas of functioning, and these eating behaviors form a distinguishable eating disorder that could be specifically identified in the DSM-5.

In terms of concurrence with previous literature, we find that the presence of fasting or driven exercise alone is associated with significantly higher levels of anxiety sensitivity than girls without eating disorders,⁸ which was commensurate with girls with AN.⁵ We concur with Mond and colleagues⁹ that severe dietary restriction predicts increased functional impairment. However, in contrast to their findings we show that the presence of driven exercise is also associated with significant impairment.^{10,11} Similar to other studies of children and adolescents,

we found that driven exercise was the most frequently used compensatory behavior.^{8,14,17} Overall our results do not support the suggestion that exercise is necessarily a gateway behavior that leads to the utilization of additional compensatory behaviors over adolescence,¹⁶ given we have identified a discrete eating disorder over repeated assessment, but this may change as the participants move into adulthood.

The limitations of the research are as follows. First, the co-occurrence of cognitive symptoms of eating disorders could not be established for many of our RED cases given the focus of the assessment was on established DSM-5 eating disorders. Further consideration of RED as a diagnostic group in its own right will require more careful assessment of these features. Second, as reported previously, this study had a 49% response rate, however, this is comparable to other large Australian twin studies and adolescent epidemiological ED studies with multiple data collection points.³⁷ Socioeconomic indicators suggest that the sample is representative of the Australian population, and response bias (in relation to BMI or level of eating disorder pathology) has not been detected within current or previous Australian twin adult cohort research.³⁸ Third, in correspondence with other studies³⁷ referral information was offered to participants with an eating disorder, which may have impacted our results over time. Fourth, given that binge eating and purging behaviors emerge later over early adulthood,^{13,39} some of the RED cases may well migrate into other eating disorder categories. Assessment of RED in a slightly older cohort will be able to address this issue. There are also a number of strengths of the current research, including: development of diagnostic status over three assessments which increases reliability, use of an interview-based diagnostic tool, and use of a range of questionnaires to assess the impact of eating disorders.

Overall the findings suggest that, rather than being unspecified, at least part of the DSM-5 UFED category represents a distinctive group of individuals with clinical impairment equivalent to recognized threshold and sub-threshold disorders of a similar nature. Further, this group appears to represent almost one-third of individuals with eating disorders. However, this is also a group at potential risk of being overlooked. Previous papers have discussed the social endorsement of exercise and “healthy eating” behaviors such as eliminating high fat foods.¹⁶ Given that this group generally present as overweight, these behaviours may in fact be encouraged rather than highlighted as cause for concern. Further research and clinical attention to this unique group is crucial to ensure that the course of this disorder is understood, and that individuals not only receive treatment, but that treatment is appropriate to this specific disorder.

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Table 1

Description of the proxy indicators of clinically significant distress and impairment

Variable (N items, Cronbach's alpha and range in current sample)	Description
Drive for thinness (7 items, $\alpha=0.83$, 1.43-6); Interoceptive awareness (10 items; $\alpha=0.93$, 1.7-6); Body dissatisfaction (8 items, $\alpha=0.91$, 1-6); Ineffectiveness (10 items, $\alpha =0.88$, 1-5.22)	Four subscales of the Eating Disorder Inventory (EDI), ²⁴ each item scored on a 6-point Likert scale ranging from <i>never</i> to <i>always</i> .
Personal standards (7 items, $\alpha =0.73$, 1.14-4)	Subscale from the Frost Multidimensional Perfectionism Scale, ²⁵ items were rated on a 5-point Likert scale, from <i>strongly disagree</i> to <i>strongly disagree</i> . Convergent validity supported with the EDI perfectionism subscale with anorexia nervosa ($r = .59$). ²⁵
Thin-ideal internalization (6 items, $\alpha=0.89$, 1-4.67)	Subscale from the Multi-Dimensional Media Influence Scale, ²⁶ each item was answered using a 5-point Likert scale (<i>never</i> to <i>always</i>). The scale correlates significantly and positively with body dissatisfaction in 8- to 11-year old females. ²⁶
Weight related peer teasing (8 items, $\alpha=0.87$, 1-4)	Subscale from the McKnight Risk Factor Survey, ²⁷ each item rated on a 5-point Likert scale (<i>never</i> to <i>always</i>).
Perceived pressure to be thin (8 items, $\alpha=0.80$, 1-3.75)	Perceived Sociocultural Pressure Scale, ²⁸ each item rated on a 5-point Likert scale (<i>never</i> to <i>always</i>), high test-retest reliability over a 2-week interval ($r = 0.87$).
Obsessionality (12 items, $\alpha=0.85$, 0-3.25)	Vancouver Obsessional Compulsive Inventory – Just Right subscale, ²⁹ each item scored on a 5-point Likert-type scale ranging from <i>not at all</i> to <i>very much</i> . Good convergent and discriminant validity. ²⁹
Anxiety sensitivity (18 items, $\alpha=0.91$, 1-2.72)	Childhood anxiety sensitivity index, ³⁰ rated on a 3-point scale (<i>none</i> , <i>some</i> , <i>a lot</i>), strongly correlated with symptoms of anxiety and depression. ³¹

Note. Mean item scores used where higher scores on each measure indicate higher levels of the indicated variable.

Table 2

Ages and duration of excessive exercise reported at each wave in the UFED group

Wave	Age commenced in years		Duration in months	
	Mean (SE)	range	Mean (SE)	range
1 (N=8)	12.89 (0.19)	12.08- 13.67	10.75 (2.85)	3-29
2 (N=5)	13.60 (0.43)	12.42-15.17	7.6 (3.40)	3-21
3 (N=17)	14.79 (0.54)	8.00-17.83	21.56 (6.23)	2-111

Note. SE = standard error

Table 3

Cognitive symptoms present when exercise or restricting criteria for UFED were met

Symptoms	Present (N)	Not assessed (N)	Percent of group endorsing symptoms
Importance of weight ≥ 4 ^a	14	8	56
Importance of shape ≥ 4 ^a	8	16	47
Feelings of fatness ≥ 4 ^b	12		36
Fear of weight gain ≥ 4 ^b	11		33
Maintained low weight ^c	13	12	62

Note: ^a Only assessed where symptoms were current or ever experienced feelings fatness or fear of weight gain; ^b assessed for all people; ^c only assessed if not overweight.

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Table 4

Comparison of diagnostic criteria for anorexia nervosa (AN) in the previous 3 months regardless of current diagnostic status at each wave across no disorder, threshold AN, atypical-AN and restrictive and/or exercise disorders (RED)

Diagnostic criteria for anorexia nervosa		No disorder (N=593)	AN (N=14)	A-AN (N=13)	RED (N=33)	F (df) p
		M (SE)	M (SE)	M (SE)	M (SE)	
Wave 1	EDE global (last 28 days)	0.31 (0.03) ^a	1.36 (0.15) ^b	1.02 (0.16) ^b	1.16 (0.10) ^b	44.63 (633.23) <0.001
	Current BMI percentile	51.85 (1.56) ^a	30.03 (5.96) ^b	47.74 (5.78) ^{a,b}	55.32 (3.78) ^a	5.06 (439.65) 0.002
	Importance of weight (last 3 months)	2.04 (0.08) ^a	2.90 (0.36) ^{a,b}	3.09 (0.38) ^b	3.33 (0.24) ^b	12.10 (358.31) <0.001
	Importance of shape (last 3 months)	2.19 (0.08) ^a	3.13 (0.36) ^{a,b}	3.86 (0.42) ^b	3.62 (0.25) ^b	16.23 (359.16) <0.001
	Feelings of fatness (last 3 months)	2.00 (0.18) ^a	5.13 (0.78) ^b	1.98 (0.68) ^b	2.56 (0.39) ^b	5.43 (112.10) 0.002
	Fear of weight gain (last 3 months)	2.24 (0.32)	3.58 (0.94)	3.60 (0.84)	2.03 (0.52)	1.45 (53.29) 0.24
Wave 2	EDE global	0.28 (0.02) ^a	1.74 (0.14) ^b	0.84 (0.14) ^c	1.16 (0.09) ^d	71.28 (601.60) <0.001
	Current BMI percentile	53.96 (1.55)	39.44 (6.29)	45.86 (6.16)	57.23 (3.99)	2.56 (446.45) 0.054
	Importance of weight (last 3 months)	2.12 (0.07) ^a	3.93 (0.32) ^b	2.85 (0.35) ^{a,b}	2.65 (0.23) ^a	12.73 (342.44) <0.001
	Importance of shape (last 3 months)	2.22 (0.07) ^a	3.73 (0.34) ^b	3.17 (0.38) ^{a,b}	2.94 (0.24) ^b	10.05 (359.09) <0.001
	Feelings of fatness (last 3 months)	0.16 (0.03) ^a	0.65 (0.15) ^b	0.46 (0.16) ^{a,b}	0.81 (1.00) ^b	17.85 (628.49) <0.001
	Fear of weight gain (last 3 months)	1.34 (0.17) ^a	4.00 (0.53) ^b	3.33 (0.74) ^{a,b}	2.60 (0.47) ^{a,b}	10.53 (51.15) <0.001

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Table 4 continued

Comparison of diagnostic criteria for anorexia nervosa (AN) in the previous 3 months regardless of current diagnostic status at each wave across no disorder, threshold AN, atypical-AN and restrictive and/or exercise disorders (RED)

Diagnostic criteria for anorexia nervosa		No disorder (N=593)	AN (N=14)	A-AN (N=13)	RED (N=33)	F (df) p
Wave 3	EDE global	0.28 (0.03) ^a	1.74 (0.14) ^b	1.23 (0.16) ^{b,c}	0.89 (0.10) ^c	52.63 (452.96) <0.001
	Current BMI percentile	52.10 (2.00)	32.97 (8.21)	52.44 (8.65)	57.98 (5.81)	2.31 (227.44) 0.08
	Importance of weight (last 3 months)	1.93 (0.08) ^a	3.34 (0.31) ^b	2.66 (0.36) ^{a,b}	1.96 (0.23) ^a	7.74 (234.95) <0.001
	Importance of shape (last 3 months)	2.14 (0.08) ^a	3.64 (0.34) ^b	3.52 (0.38) ^b	2.32 (0.24) ^a	10.12 (228.33) <0.001
	Feelings of fatness (last 3 months)	1.64 (0.17) ^a	4.99 (0.51) ^b	3.02 (0.56) ^{a,b,c}	2.90 (0.37) ^c	15.43 (80.24) <0.001
	Fear of weight gain (last 3 months)	2.24 (0.37)	4.17 (0.74)	4.33 (0.91)	3.45 (0.57)	2.98 (20.15) 0.06

Note. M=mean and SE=standard error.

Significant differences within each wave (bolded) were required to meet an alpha < 0.008; post-hoc comparisons are Bonferroni-adjusted and superscripts indicate where significant differences between groups exist.

Referrals of youth to an eating disorder treatment program¹³ reported mean global EDE scores of 1.0 (no compensatory behavior) to 3.5 (multiple methods of compensatory behavior); importance of weight and shape in an adult treatment seeking adults was 4.69 and 4.73 respectively.³²

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Table 5

Comparison of clinically significant distress and impairment across no disorder, threshold anorexia nervosa (AN), atypical anorexia nervosa (A-AN) and restrictive and/or exercise disorders (RED)

Indicators of impairment or distress	No disorder (N=593)	AN (N=14)	A-AN (N=13)	RED (N=33)	F (df) p	
	M (SE)	M (SE)	M (SE)	M (SE)		
Wave 1	Weight related peer teasing	1.37 (0.03) ^a	1.76 (0.14) ^b	1.57 (0.15) ^{a,b}	1.93 (0.09) ^b	14.44 (630.29) <0.001
	Internalisation of the thin ideal	1.53 (0.03) ^a	2.12 (0.18) ^b	1.90 (0.18) ^{a,b}	2.45 (0.11) ^b	25.89 (626.87) <0.001
	Ineffectiveness	1.79 (0.03) ^a	2.52 (0.18) ^b	2.04 (0.19) ^{a,b}	2.46 (0.12) ^b	14.93 (620.75) <0.001
	Body dissatisfaction	2.30 (0.05) ^a	2.87 (0.27) ^{a,b}	2.56 (0.28) ^a	3.45 (0.17) ^b	15.65 (596.87) <0.001
	Obsessionality (just right)	0.60 (0.03) ^a	0.84 (0.15) ^{a,b}	0.85 (0.15) ^{a,b}	0.96 (0.09) ^b	6.00 (643.22) <0.001
	Pressure to be thin	1.29 (0.02) ^a	1.62 (0.12) ^b	1.62 (0.12) ^b	1.78 (0.08) ^b	18.11 (627.59) <0.001
Wave 2	Personal standards	2.42 (0.02) ^a	2.61 (0.11) ^{a,b}	2.98 (0.11) ^b	2.63 (0.07) ^c	11.85 (607.63) <0.001
	Anxiety sensitivity	1.52 (0.01) ^a	1.76 (0.08) ^b	1.57 (0.08) ^{a,b}	1.82 (0.05) ^b	13.15 (605.25) <0.001
	Weight related peer teasing	1.27 (0.02) ^a	1.63 (0.12) ^b	1.36 (0.12) ^{a,b}	1.68 (0.08) ^b	12.16 (592.71) <0.001
Wave 3	Interoceptive awareness	4.58 (0.04) ^a	3.85 (0.18) ^b	3.93 (0.21) ^b	4.24 (0.14) ^{a,b}	9.39 (323.91) <0.001
	Drive for thinness	4.42 (0.06) ^a	3.37 (0.29) ^b	3.13 (0.33) ^b	3.70 (0.21) ^b	11.94 (336.41) <0.001

Note: M=mean and SE=standard error.

Significant differences within each wave were required to meet an alpha < 0.008 (Wave 1), <0.017 (Wave 2) and <0.025 (Wave 3); post-hoc comparisons are Bonferroni-adjusted and superscripts are used to indicate where significant differences between groups exist.