Validation of an Existing Measure of Eating Disorder Risk for Use with Early Adolescents

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Abstract

This study tested a brief eating disorder risk measure, originally developed for use with college students, in young adolescents. The measure is called the COEDS (College Eating Disorders Screen) and is constructed of items written in everyday language used by youth to discuss weight issues, rather than in the language of symptom assessment. A sample of 246 early adolescents (mean age, 13) completed questionnaire measures of puberty, eating disorder behavior, and eating disorder risk two times in a 12-month span. We found that: (a) the COEDS was internally consistent; (b) COEDS scores were stable across one year; and (c) COEDS scores predicted restricting and compensatory behavior one year later, above and beyond prediction from sex, race, prior restricting and compensatory behavior, and prior BMI. The COEDS appears to be a reliable and valid measure for risk assessment in youth; it may prove useful for researchers and clinicians interested in screening for risk and as a means to test whether prevention efforts have reduced risk.

Keywords

Eating disorders; assessment; risk; adolescents; restricting behavior; COEDS

1. Introduction

Eating disorder symptoms are present at the beginning of adolescence for many girls and boys (e.g., Combs, Pearson, & Smith, 2011; Cotrufo, Cella, Cremato, & Labella, 2007; Culbert, Burt, McGue, Iacono, & Klump, 2009; Pearson, Combs, & Smith, 2010) and the risk mechanisms for developing such symptoms seem to be the same for both sexes (Combs et al., 2011; Pearson et al., 2010; Pearson, Combs, Zapolski, & Smith, 2012). The presence of eating disorder symptoms in adolescents this young is important because of the harm they

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cause and because early symptom presence predicts further symptom development in the future, including the onset of bulimia nervosa and anorexia nervosa (Combs, Pearson, Zapolski, & Smith, 2012; Kotler, Cohen, Davies, Pine, Walsh, 2001; Smith, Simmons, Flory, Annus, & Hill, 2007).

It is therefore important to assess risk for eating disorder symptomatic behavior in early adolescents. Some measures to assess eating disordered behavior in children and adolescents do exist, including the Children's Eating Attitudes Test (ChEAT; Maloney, McGuire, Daniels, & Specker, 1989); the Eating Disorder Examination—Questionnaire, modified for children (EDE-Q; Fairburn & Beglin, 1994; Carter, Stewart, & Fairburn, 2001); and the Children's Eating Disorder Inventory (EDI-C; Garner, 1991). Of these, the EDE-Q (Fairburn & Beglin, 1994; Carter et al., 2001) is the most widely used, most likely because of its generally good reliability and validity (Cooper & Fairburn, 1993; Luce & Crowther, 1999; Mond, Hay, Rodgers, Owen, & Beumont, 2004). It was adapted for use with a younger population by using age-appropriate wording, defining concepts that could possibly be difficult to understand, and shortening the length of time referred to in the questions (Carter et al., 2001). These measures, including the ChEAT (Maloney et al., 1989) EDE-Q (Fairburn & Beglin, 1994; Carter et al., 2001) and EDI-C (Garner, 1991), which are all modified versions of adult instruments, have been shown to render false-positive and false-negative diagnoses in children (Kashubeck-West, Mintz, & Saunders, 2001; Powers, 1996) and also tend to have lower reliability of some subscales when used with a young, non-clinical population (Eklund, Paavonen, & Almqvist, 2005).

Additionally, a measure called the Weight Concerns scale (Killen, Taylor, Hayward, Wilson, Haydel, Hammer, Simmonds et al., 1994) has been used to assess eating disorder risk among adolescents. It consists of 5 items that are designed to ascertain subjects' fear of weight gain, worry over weight and body shape, importance of weight, diet history, and perceived fatness. It has been shown to prospectively predict eating disorder symptoms, particularly symptoms related to bulimia nervosa (Killen et al., 1994). However, this scale does not tap into eating concerns or the social influences (e.g., impact of social gatherings) on eating that are often present. Furthermore, the language used is more clinical than everyday (e.g., "How much more or less do you feel you worry about your weight and body shape than other girls your age?" or "How afraid are you of gaining 3 pounds?"). Lastly, this scale has only been validated for use with girls; thus, its utility for boys is unknown (Killen et al., 1994).

In addition, a youth measure has been developed for the assessment of binge eating behavior. The Questionnaire on Eating and Weight Patterns-Adolescent form (QEWP-A: Johnson, Grieve, Adams, & Sandy, 1999) was developed to reflect the proposed diagnostic criteria for binge eating disorder in DSM-IV. There is some evidence for the QEWP-A's stability across three weeks and its concurrent validity (Johnson et al., 1999; Jonson, Kirk, & Reed, 2001). The measure was not designed to assess restricting behavior.

Measures such as the EDE-Q have clear diagnostic utility. However, the items focus primarily on diagnosable eating disordered behaviors (e.g., "How often do you throw up?"). It thus seems useful to add to researchers' and clinicians' assessment options a measure that does not inquire directly about symptomatic behavior, but instead uses everyday language to assess cognitions and beliefs that might place adolescents at risk for symptom development. If responses to such a measure did prove predictive of dysfunction, the measure could be used to assess adolescents who are either at risk for symptom development or in the early stages of dysfunctional behavior but who lack diagnosable disorder status.

1.1. COEDS (College Oriented Eating Disorders Screen)

We investigated the use, for early adolescents, of an at risk measure originally developed to be applied to college students. The College-Oriented Eating Disorders Screen (COEDS; Nowak, Roberson-Nay, Strong, Bucceri, & Lejuez, 2003) was constructed to target a subpopulation of college students who were symptomatic and vulnerable to developing clinically significant symptoms, but remained unidentified by prevalence studies that focused on more severe diagnostic criteria (Nowak et al., 2003). In the development of the COEDS, the authors began with a large pool of pilot questions and used item response theory to reduce the item pool to seven items (Nowak et al., 2003; Mulqueen, Baker, & Dismukes, 2002). When used with college students, the COEDS has excellent internal consistency (Nowak et al., 2003; Bucceri, Roberson-Nay, Strong, Nowak, & Lejuez, 2005), good convergent validity with related eating disorder measures and their subscales (Bucceri et al., 2005), good discriminant validity in relation to the prediction of depressive symptoms (Bucceri et al., 2005), and strong test-retest reliability (r=.81, p<.01) over a one-month time span (Bucceri et al., 2005). The test developers concluded that the COEDS is particularly useful for identifying sub-clinical individuals who may carry the beliefs and engage in the behaviors that put them at risk for development of an eating disorder (Nowak et al., 2003; Bucceri et al., 2005).

The COEDS items do not assess diagnostic symptoms and the language used suggests its suitability for young adolescents. Example items include, "I freak out when I weigh myself and I have gained a few pounds," "I feel very competitive with other girls/boys who have better bodies than I do," and "I compare my body to other girls'/boys' bodies when I go to a social gathering." It is not presented here as an alternative to measures such as the EDE-Q for symptom assessment. Its potential value is that it is a brief measure that provides a plain language assessment of behaviors and cognitions that suggest eating pathology risk in early adolescents.

The purpose of the present paper is thus to test the reliability and validity of the COEDS (Nowak et al., 2003) in a younger sample (aged 11–15). This is the first time the COEDS has been used for a population younger than college. Using a 12-month prospective design, we tested (a) the internal consistency of the COEDS in youth on two occasions; (b) the stability of COEDS scores across one year; and (c) whether COEDS scores at the start of the study predicted restricting and compensatory behavior one year later. We tested whether COEDS scores had incremental validity in predicting the criterion beyond sex, ethnicity, body mass index (BMI), and prior restricting and compensatory behavior. Because pubertal status predicts disordered eating (Pearson et al., 2012), it was considered as another candidate predictor. A positive longitudinal finding, in the sense of time-lagged prediction of early adolescent restricting and compensatory behavior by COEDS scores, would point to the potential utility of the COEDS in assessing risk among adolescents this young.

2. Method

2. 1. Participants

Participating early adolescents and their parents were assessed twice, one year apart. The sample included 246 youth and, for each child, at least one parent; 45.1% of the adolescents were female, with a mean age of 13.0 years (SD = .90). In the first year of data collection, 73.4% of girls and 32.6% of boys had experienced pubertal onset. By the second year of data collection, 92.0% of girls and 55.6% of boys had experienced pubertal onset. Parents reported annual family incomes ranging from $0–48,000 (13.8%), $48,001–85,000 (27.3%), $85,001–120,000 (23.5%), and greater than $120,000 (35.4%). Most of the adolescents were of either European American or African American descent: 51.3% European American, 33.9% African American, 2.6% Latino, and 10.9% of mixed ethnicity.

2.2. Procedures

The Institutional Review Board at the University of Maryland approved collection of data analyzed and described here. Participants were a convenience sample of youth and their parents recruited in the greater metropolitan Washington D.C. area via media outreach and mailings with area schools, libraries, and Boys and Girls Clubs. Recruitment lasted approximately 2 years and was open to all youth in the 5th and 6th grades who were proficient in English. Families interested in participating were excluded only if children or parents lacked proficiency in English; no other exclusion criteria were used. When inclusion criteria were met, families were scheduled to complete a battery of self-report questionnaires on the University of Maryland campus. The same measures were administered on the two testing occasions. Parents and adolescents completed informed consent and assent forms at both waves of the study. Parents and adolescents completed all procedures in separate rooms. Parents were compensated with payments of thirty-five dollars and youth were compensated with prizes of varying costs, ranging up to about thirty dollars.

2.3. Measures

2.3.1. Demographics and other background information—Demographic information was collected using a brief form completed by the parents only. This form contains items pertaining to several child demographic variables, such as age, sex, grade, and race, as well as more personal parent information, such as annual income, and family structure.

2.3.2. Height and Weight—We assessed height and weight of the adolescents. Collection of both physical measures was accomplished at the beginning of each session using a medical scale with a built-in height rod.

2.3.3. Body Mass Index (BMI)—BMI scores for each participant were calculated from measured height and weight. This calculation was done separately at year 1 and year 2.

2.3.4. Pubertal Status—Pubertal status was assessed using the Pubertal Development Scale (Petersen, Crockett, Richards, & Boxer, 1988), which is a brief self-report measure consisting of five questions for girls and five questions for boys. Sample questions include "Have you begun your period?" for girls and "Have you noticed a deepening of your voice?" for boys. Questions were answered on a 4-point scale (1 = no, 4 = development completed). The scale has acceptable reliability estimates (alphas ranging from .67 to .76 for 11-year-olds), and scores on it correlate highly with physician ratings and other forms of self-report (*r* values ranging from .61 to .67: Brooks-Gunn, Warren, Rosso, & Gargiulo, 1987; Coleman & Coleman, 2002). The Pubertal Development Scale permits dichotomous classifications as prepubertal or pubertal, with mean scores above 2.5 indicative of pubertal onset. As is common (e.g., Combs et al., 2011; Culbert et al., 2009; Pearson et al., 2010), dichotomous classification was used in the current study.

2.3.5. Eating Disordered Behaviors—Engagement in pathological eating, dieting, and/ or compensatory behavior was assessed using items from a modified version of the Youth Risk Behavior Surveillance System (YRBSS; Centers for Disease Control and Prevention, 2001), which has been shown to be reliable (Brener, Kann, McManus, Kinchen, Sundberg, & Ross, 2002; Keith, Pun, Patton, & Ubbes, 2006). In addition to items measuring risk behaviors such as drinking, smoking cigarettes, and drug use, the YRBSS assesses for a variety of eating-disordered restricting and compensatory behaviors with five items that assessed vomiting or laxative use, exercising to lose/keep from gaining weight, eating fewer calories or low-fat foods, going over 24 hours without eating, and using diet pills. Though these items are not considered a subscale, they have been used together to capture eating

disorder behavior in previous work and that research supports the construct validity of the set of items (e.g., Aklin, Lejuez, Zvolensky, Kahler, & Gwadz, 2005; Lejuez, Aklin, Daughters, Zvolensky, Kahler, & Gwadz, 2007). Engagement in each behavior was measured dichotomously (yes/no) within a 30-day timeframe (i.e. each item contained the phrase "Over the past 30 days, did you…"). Response options were dichotomized because of the non-normality of reported risk behaviors. We summed the five items to obtain a behavioral index of restricting and compensatory behavior.

2.3.6. College Oriented Eating Disorders Screen (COEDS; Nowak et al., 2003)

—The items of the COEDS are provided in Table 1. All wording in the items was unchanged with the exception of the words "women/men," which were changed to "girls/ boys" for the current study. Responses are on a 5-point likert scale ranging from "never" to "always". When used with college students, despite its brevity it has demonstrated excellent internal consistency ($\alpha = .92$) and good test-retest reliability ($r = .81$, $p < .01$) over one month, as well as evidence for construct validity based on significant associations with several widely used measures of disordered eating (Bucceri et al., 2005).

3. Results

3.1. Attrition and Treatment of Missing Data

The retention rate from wave 1 to wave 2 was 93%. Analyses comparing retained and non-retained participants on all study variables indicated no significant differences. We therefore assumed data were missing at random, and we used the expectation maximization (EM) procedure to impute values for the missing data points. This procedure has been shown to produce relatively unbiased population parameter estimates and to be superior to traditional methods, such as deleting cases with missing data or conducting mean substitutions for missing values (Little & Rubin, 1989). As a result, we were able to make full use of the sample of $n = 246$.

3.2. Reliability and Descriptive Statistics

BMI levels were in the normal range: Year 1 mean BMI = 21.45 (s.d. = 6.12); year 2 mean BMI = 23.08 (s.d. = 5.55). BMI levels increased significantly across the 12 months ($t(245) = 6.12$, $p < .001$). Boys' and girls' BMI score did not differ at either year 1 or year 2, and change over the 12 months did not differ by sex. African American adolescents had higher BMI scores at both year 1 ($t(202) = 3.83$, $p < .001$) and year 2 ($t(202) = 4.48$, $p < .001$), but change in BMI did not differ by race. As Table 2 shows, both boys and girls were engaging in various forms of restricting and compensatory behavior. The highest percentage of participants reported exercising and eating less to restrict weight; a smaller percentage of participants reported active engagement in purging activities. In year 2, restricting and compensatory behavior was associated with sex such that a higher percentage of girls reported restricting and compensatory behavior: ($t(244)=3.22$, $p<.01$). The sexes did not differ in restricting and compensatory behavior at year 1. The two racial groups did not differ in restricting and compensatory behavior.

Internal consistency of the COEDS in youth was very good for year 1 ($\alpha=.85$) and year 2 ($\alpha=.87$). The measure was also found to be stable across the 12 month period ($r=.73$, $p<.01$). We examined the influences of sex and time on COEDS scores using a mixed design analysis of variance. Similar to what has been observed in adults, girls (mean COEDS score = 12.97) scored higher than boys (mean score = 9.60: $F(1, 244) = 34.47$, $p < .001$). COEDS scores increased across this one year period of early adolescence, from a mean of 10.79 to a mean of 11.46 ($F(1, 244) = 8.38$, $p < .01$). There was no interaction between sex and time.

European American and African American youth did not differ in COEDS scores at either year 1 or year 2, and there was no interaction between race and time on COEDS scores.

3.3. Correlations among Study Variables

Table 3 presents correlations among key study variables. Pubertal status and sex are dichotomous so in those cases point biserial correlations were conducted. In all other cases, Pearson product moment correlations were conducted. As the table shows, in addition to the stability of COEDS scores across the 12 month period, restricting and compensatory symptom scores were also stable ($r = .49$, $p<.01$). COEDS scores correlated with restricting and compensatory symptom scores, both cross-sectionally and prospectively. Time 1 COEDS scores explained 17.6% of the variance in Time 2 restricting and compensatory behavior scores. Neither COEDS scores nor restricting and compensatory symptom scores were related to either pubertal status or family income. COEDS scores had only one significant but small correlation with BMI ($r=.16$, $p<.05$), and restricting and compensatory symptomatology was positively correlated with BMI both cross-sectionally and longitudinally.

3.4. Prospective Predictions from COEDS Scores to Restricting and Compensatory Behavior in Youth

To predict youth restricting and compensatory behavior in year 2 from COEDS scores in year 1, we used hierarchical multiple regression. Using a stepwise method, at Step 1 we entered sex and race (coded dichotomously to compare European American and African American children). At Step 2, we entered year 1 restricting and compensatory behavior. At Step 3, we entered year 1 BMI and finally at Step 4, we entered year 1 COEDS. This order allowed us to test each variable's incremental validity over sex and COEDS' incremental validity over all other relevant variables. We did not include pubertal status because it was unrelated to either COEDS scores or restricting and compensatory behavior bivariately. Sex was a significant predictor at step 1; at step 2, year 1 restricting and compensatory behavior predicted year 2 restricting and compensatory behavior beyond prediction by sex. At step 3, year 1 BMI had incremental validity over sex and year 1 restricting and compensatory behavior. At step 4, COEDS scores had incremental validity over all of the other variables; that is, COEDS scores added significantly to prediction of year 2 restricting and compensatory behavior beyond prediction from the other variables. With all the variables entered into the regression equation, sex ($\beta=-.15$, $p<.01$, girls higher, $sr^2=.02$), previous restricting and compensatory behavior ($\beta=.26$, $p<.001$, $sr^2=.05$), BMI at year 1 ($\beta=.23$, $p<.001$, $sr^2=.04$), and COEDS scores at year 1 ($\beta=.27$, $p<.001$, $sr^2=.05$) each explained variance in year 2 restricting and compensatory behavior (see Table 4). We also tested whether there was an interaction between sex and COEDS scores in predicting subsequent restricting and compensatory behavior. There was not.

As Table 2 indicates, the most frequently endorsed restricting and compensatory behaviors could be understood to reflect normal range behaviors. To determine whether COEDS scores prospectively predict the more extreme and less frequent restricting and compensatory behaviors of going 24 hours without eating, taking diet pills, or vomiting or using laxatives, we created a dichotomous variable reflecting engagement in any of these three behaviors at year 1 and year 2. We then conducted a logistic regression analysis in which we predicted the presence of such extreme behaviors at year 2 from sex, race, the presence of the such behaviors at year 1, BMI, and COEDS scores, again with COEDS scores entered into the equation last. The odds ratios were as follows: sex (Odds Ratio = 1.15, p = .79); year 1 extreme behaviors (Odds Ratio = 2.50, p = .20); year 1 BMI (Odds Ratio = 1.02, p = .68); year 1 COEDS (Odd Ratio = 1.13, p <.01). COEDS scores also predicted this more stringent criterion significantly after controlling for the other predictors.

Although some other predictors had Odds Ratios as high as, or higher than, the Odds Ratio for the COEDS, they had larger standard errors and hence could not be concluded to be significantly different from chance prediction, as reflected in their p values. For each one unit increase in COEDS scores, adolescents were 15% more likely to have engaged in at least one of the extreme restricting behaviors.

4. Discussion

The purpose of this paper was to test the viability of a brief measure that can be used to assess eating disorder risk, rather than current symptom level, in early adolescents. Having a validated measure of eating disorder risk in this age group is important, because if it is possible to identify early adolescents in the early stages of dysfunctional eating and before they develop diagnosable eating disorders, this information may be used to target effective prevention to ameliorate their risk. In addition, access to a brief, valid measure is important because, frequently, time and space are at a premium in research and clinical assessment. Researchers currently have access to an effective measure for the assessment of eating disorder symptoms in children and adolescents this young (the EDE-Q: Fairburn & Beglin, 1994; Carter et al., 2001); our intent was to add a brief measure of risk, using questions written in common, every day language familiar to early adolescents, to researchers' assessment arsenal.

The COEDS, a risk measure originally developed for use with college students, assesses general concerns about body image and weight using language that is likely to be familiar to, and comfortable for, early adolescents. We found that the scale, unaltered from the college version, was highly internally consistent and was stable across a one-year period in early adolescents. As was true with college students, girls had higher mean scores than boys. Most importantly, COEDS scores provided by early adolescents of mean age 13.0 years predicted restricting and compensatory behavior 12 months later, and did even when controlling for the influences of sex, race, initial restricting and compensatory behavior, and BMI. It thus appears possible to anticipate increases in restricting and compensatory behaviors during early adolescence based on initial scores on the COEDS. Endorsement of the pre-symptomatic behaviors/cognitions indexed by the COEDS helps identify which adolescents are engaging in restricting and compensatory behaviors 12 months later; it increases the ability to identify children beyond identification by prior restricting and compensatory behavior alone. The COEDS may thus prove to be a fruitful brief tool for assessing risk during these formative years.

There are important reasons for eating disorder researchers and clinicians to focus attention on the early adolescent years. From the theoretical perspective of developmental psychopathology (Cicchetti & Rogosch, 2002; Sroufe & Rutte, 1984), early involvement in symptomatic behaviors is likely to influence individuals' subsequent developmental trajectories, making continued and increased symptomatic behavior more likely. This perspective has been borne out in the field of eating disorders. Specifically, early risk is associated with much higher rates of bulimia nervosa and anorexia nervosa by the end of adolescence (Killen et al., 1994; Kotler et al., 2001) and with higher rates of a number of physical and mental health problems during adulthood (Johnson, Cohen, Kasen, & Brook, 2002).

The direct assessment of symptomatic behavior in early adolescents is crucial, and the EDE-Q (Fairburn & Beglin, 1994; Carter et al., 2001) provides a well-validated means of doing so. There is also a need to assess risk, and the current study demonstrated that the COEDS may serve that purpose. The measure assesses risk for restricting and compensatory behavior

beyond what is predictable from BMI, sex, and even prior restricting and compensatory behavior.

The findings of this study should be understood in the context of the study's limitations. First, all assessments were via self-report; it is possible that more precise information about both risk and symptomatic behavior could have been obtained from interviews with the early adolescents. Second, we did not assess binge eating behavior; our focus was on restricting and compensatory behavior and the current findings concern only those problems. Third, we did not diagnose study participants, so this report does not provide information about prediction of subsequent diagnosed eating disorders. Fourth, the sample was relatively affluent and thus we do not know whether the COEDS would prove as effective in a low socioeconomic status population. Fifth, we also did not have a representative sample of Latino participants, thus it remains unclear whether the COEDS would be an appropriate tool for this population. This is an important area to assess for future research. Sixth, we did not include any other measures of eating psychopathology. Future studies should assess the association between the COEDS and other risk measures, like the chEAT (Maloney et al., 1989), EDE-Q (Fairburn & Beglin, 1994; Carter et al., 2001), or Weight Concerns Scale (Killen et al., 1994). Seventh, although prediction from the COEDS did not differ by sex, we did not do a qualitative analysis to understand the nature of boys' responses to the questions as compared to girls' responses. Such work is an important and necessary future direction for COEDS research.

Despite these limitations, the findings of the current study suggest that the COEDS can be used to assess risk for subsequent restricting and compensatory behavior in vulnerable early adolescent samples. Future research can evaluate whether the COEDS predicts subsequent binge eating behavior or bulimia nervosa symptomatology. Ultimately, the COEDS may prove useful for clinicians interested in screening for risk and as a means to test whether prevention efforts have reduced risk.

Acknowledgments

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Highlights

- The COEDS (College Eating Disorders Screen) can be used with early adolescents.

- The COEDS is a reliable and valid measure for risk assessment in youth.

- The COEDS predicts restricting behavior a year later.

- The COEDS may be useful for researchers and clinicians as a screening tool for risk.

Table 1

Items on the COEDS

Item 1	I am embarrassed when I am with a group of people and I am the only one ordering food.
Item 2	I compare my body to other girls'/boys' bodies when I go to a social gathering.
Item 3	I get very upset when I weigh myself and I have gained a few pounds.
Item 4	I can see my body getting fatter when I eat a meal.
Item 5	I believe I am fatter than most people say I am.
Item 6	I feel very competitive with other girls/boys who have better bodies than I do.
Item 7	I feel guilty or sad after I eat something fatty.

Note: Responses are on a 5-point likert scale: 1= "Never"; 2= "Sometimes; 3= "Half the time"; 4= "Often"; 5= "Always".

Table 2

Frequencies of Restricting/Compensatory Behavior

Restricting/Compensatory Behavior (in last 30 days)	Frequencies			
	Year 1		Year 2	
	Boys	Girls	Boys	Girls
Exercise to lose weight or keep from gaining weight	75 (55.5%)	68 (61.3%)	62 (45.9%)	68 (61.3%)
Eat less food, fewer calories, or foods low in fat	31 (23.0%)	41 (36.9%)	30 (22.2%)	47 (42.3%)
Go without eating for 24 hours or more	6 (4.4%)	5 (4.5%)	2 (1.5%)	5 (4.5%)
Take any diet pills, powders, or liquids	3 (2.2%)	0 (0.0%)	1 (0.7%)	0 (0.0%)
Vomit or take laxatives	2 (1.5%)	2 (1.8%)	2 (1.5%)	2 (1.8%)

Table 3

Correlations Among Study Variables

	Sex	Income	Pub-1 (Girl)	Pub-2 (Girl)	Pub-1 (Boy)	Pub-2 (Boy)	COEDS-1	COEDS-2	Restrict/Compens-1	Restrict/Compens-2	BMI-1
Sex	--	--	--	--	--	--	--	--	--	--	--
Income	.09	--	--	--	--	--	--	--	--	--	--
Pub-1 (Girl)	--	-.08	--	--	--	--	--	--	--	--	--
Pub-2 (Girl)	--	.12	.39*	--	--	--	--	--	--	--	--
Pub-1 (Boy)	--	-.09	--	--	--	--	--	--	--	--	--
Pub-2 (Boy)	--	-.08	--	--	.50*	--	--	--	--	--	--
COEDS-1	-.31*	.08	.18	.08	.05	-.10	--	--	--	--	--
COEDS-2	-.34*	.06	.13	.11	.10	-.01	.73*	--	--	--	--
Restrict/Compens-1	-.10	.10	.12	.06	.02	.02	.42*	.36*	--	--	--
Restrict/ Compens-2	-.20*	.00	.17	.15	.12	.06	.42*	.48*	.49*	--	--
BMI-1	-.02	-.14	.14	.01	.03	.04	.12	.16	.38*	.37*	--
BMI-2	-.01	-.19*	.11	-.05	.14	.11	.10	.11	.32*	.29*	.75**

Note: The number following the variable represents the year in which the data was collected (i.e., 1 indicates year 1 and 2 indicates year 2); Pubertal status and sex are dichotomous so in those cases point biserial correlations were conducted. In all other cases, Pearson product moment correlations were conducted.

*
p<.01

Table 4

Results of Hierarchical Multiple Regression Predicting Year 2 Restricting Behavior from Year 1 COEDS

Model	β	SE	R^2	F for R^2 Change
Step 1			.08[*]	8.35[**]
Sex	−.28[**]	.13		
Race	.01	.13		
Step 2			.26[**]	52.10[**]
Sex	−.22[**]	.12		
Race	.06			
Year 1 Restricting/Compensatory	.45[**]	.06		
Step 3			.30[**]	12.32[**]
Sex	−.22[**]	.12		
Race	.11	.12		
Year 1 Restricting/Compensatory	.37[**]	.06		
Year 1 BMI	.23[**]	.01		
Step 4			.35[**]	16.93[**]
Sex	−.15[*]	.12		
Race	.06	.12		
Year 1 Restricting	.26[**]	.07		
Year 1 BMI	.23[**]	.01		
Year 1 COEDS	.27[**]	.01		

Note:

[*]
$p < .01$.

[**]
$p < .001$. β reflects standardized beta coefficient; SE reflects the standard error of the beta coefficient.