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# The EAT-16: Validation of a Shortened Form of the Eating Attitudes Test

Elizabeth McLaughlin

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**THE EAT-16: VALIDATION OF A SHORTENED FORM OF  
THE EATING ATTITUDES TEST**

**by**

**ELIZABETH MCLAUGHLIN**

**BACHELOR OF ARTS**

**THESIS**

Submitted in Partial Fulfillment of the  
Requirements for the Degree of

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**Psychology**

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# **THE EAT-16: VALIDATION OF A SHORTENED FORM OF THE EATING ATTITUDES TEST**

**by**

**Elizabeth McLaughlin**

**B.A., Psychology, McGill University, 2008**  
**M.A., Psychology, University of New Mexico, 2014**

## **ABSTRACT**

Eating disorders (EDs) are common in certain nonclinical groups, such as college students. Given known health risks and other sequelae of EDs, and difficulties in assessing them, psychometrically sound measures are needed. This study assessed the validity of the EAT-16, a shortened form of the EAT-26. The EAT-16 had been previously proposed and tested as a screening measure for EDs. The measure was tested in the current study in a sample of Caucasian and Hispanic undergraduate females. In a confirmatory factor analysis, the EAT-16 four-factor structure was replicated in the Caucasian and Hispanic groups, and support for metric invariance was found. In the group of half-Hispanic individuals, a novel four-factor structure was found. In the overall sample, convergent validity and diagnostic accuracy of the measure were supported. The results provide support for the use of the EAT-16 total score in screening for eating disorders in nonclinical samples.

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## **The EAT-16: Validation of a Shortened Form of the Eating Attitudes Test**

### **Introduction**

Eating disorder (ED) prevalence rates among women are estimated at 2-6% (Grilo, 2006; Hudson, Hiripi, Pope, & Kessler, 2007; Taylor et al., 2006). There are three ED diagnoses in the 2000 edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; American Psychiatric Association). In anorexia nervosa (AN), individuals maintain a low weight, fear weight gain, and have amenorrhea (females). In bulimia nervosa (BN), individuals engage in bouts of binge eating accompanied by efforts to compensate (e.g., self-induced vomiting, laxative misuse, compulsive exercising, fasting). Eating disorder not otherwise specified (EDNOS) involves clinically significant behaviors which do not meet other diagnostic criteria, but which can be as severe as those of AN (Gordon, Holm-Denoma, Crosby, & Wonderlich, 2010; Thomas, Vartanian, & Brownell, 2009). The more recent DSM-5 retains the AN and BN diagnoses but with a few changes, including: amenorrhea is no longer required for AN, and both binge eating and compensatory behaviors in BN can be less frequent. Additionally, EDNOS is now referred to as Other Specified Feeding or Eating Disorder, and binge eating disorder was moved from the provisional diagnoses section of the DSM-IV and made a permanent diagnosis (American Psychiatric Association, 2013). Overall, the DSM-5 eating disorders closely resemble DSM-IV diagnoses.

EDs disrupt social, work, and family life (Hudson et al., 2007). Effects include extreme weight loss techniques, preoccupation with weight/shape, and depressed mood (Beumont, 2002). AN has among the highest mortality rates of all psychiatric disorders (Harris & Barraclough, 1998), and can lead to osteoporosis, stunting of growth, and

congestive heart failure (Beumont, 2002; Schocken, Holloway, & Powers, 1989). BN is associated with gastrointestinal complications and dental damage (Pomeroy & Mitchell, 2002).

Disordered eating is more common in college-age women than any other age group (Striegel-Moore et al., 2003). Related disturbances such as subthreshold EDs and unhealthy methods of weight control are also common in this group (Berg, Frazier, & Sherr, 2009; Schwitzer, Bergholz, Dore, & Salimi, 1998; Taylor et al., 2006). Body dissatisfaction, one of the most robust predictors of EDs (Stice, 2001), is found frequently among college women (Klemchuk, Hutchinson, & Frank, 1990). Given the prevalence and disruptive effects of EDs, accurate assessment of EDs is critical.

Numerous instruments for assessing EDs and eating disturbances have been published, with a few measures being used most frequently across studies (Kashubeck-West, Mintz, & Saunders, 2001; Túry, Güleç, & Kohls, 2010; Williamson, Anderson, Jackman, & Jackson, 1995). Research into the psychometric properties of these measures is ongoing. The purpose of the current study was to examine the validity of a new shortened form of a frequently used assessment measure, the Eating Attitudes Test (EAT; Garner & Garfinkel, 1979).

### **The EAT: Development and Utility**

The Eating Attitudes Test-26 (EAT-26; Garner, Olmsted, Bohr, & Garfinkel, 1982) is one of the most frequently used assessment measures for eating disturbances. The EAT-26 is a short version of the EAT, a 40-item measure published in 1979 (Garner & Garfinkel). The EAT was the first questionnaire developed to assess ED symptoms systematically (Williamson et al., 1995). The EAT-26 arose from a factor analysis which

determined that 14 items did not contribute to factor loadings for the EAT (Garner et al., 1982).

The EAT was designed to assess symptoms of AN as conceptualized by the Feighner group criteria (Feighner et al., 1972), an early mental illness diagnostic system. In this system, AN was defined as beginning before age 25, and marked by excessive weight loss and distorted beliefs about food, eating, and weight. Under the Feighner criteria, bulimia was thought to be one possible manifestation of AN, but BN did not exist as a distinct disorder. The EAT was designed to capture individuals with bulimic symptomatology as well. Thus, it appears that the EAT not only screens for behaviors associated with AN, but should produce high scores in individuals with BN or the more recently created EDNOS category (Mintz & O'Halloran, 2000). In research, the EAT has been used as a measure of AN, as a measure of both AN and BN, and as a measure of more general disordered eating (Jacobi, Abascal, & Taylor, 2004; Kashubeck-West et al., 2001).

The EAT-26 has three factors: Dieting, Bulimia and Food Preoccupation, and Oral Control. Dieting concerns preoccupation with one's body shape and excessive avoidance of fattening foods. Bulimia and Food Preoccupation refers to preoccupation with food, and to behaviors and attitudes reflective of bulimic symptomatology. Oral Control concerns a need for control around food (Garner et al., 1982). Though some early studies treated the EAT-26 factors as independent measures (e.g., Hamilton, Brooks-Gunn, & Warren, 1985; Wing, Nowalk, Marcus, Koeske, & Finegold, 1986), researchers have more often used the total score (e.g., Attie & Brooks-Gunn, 1989; Franco,

Tamburrino, Carroll, & Bernal, 1988; Rodin, Johnson, Garfinkel, Daneman, & Kenshole, 1986).

The EAT-26 was created as a screening measure, rather than an outcome or diagnostic measure (Garner et al., 1982). Screening measures are designed to detect *all* diagnosable individuals (cases) in a sample. As screening measures may label non-cases as pathological, follow-up measures are used to confirm diagnoses (Jacobi et al., 2004). As a screening measure, the EAT was validated on a sample of women diagnosed with AN and a control group free of eating disorder diagnoses (Garner & Garfinkel, 1979). As this sample contained a large subset of individuals with eating disorders (35.9% of the sample) by design, some researchers have suggested caution in interpreting EAT scores in nonclinical samples (Mintz & O'Halloran, 2000; Williams, Hand, & Tarnopolsky, 1982). Any measure's ability to correctly identify diagnosable cases varies with prevalence, with higher prevalence rates allowing better detection of cases (Williams et al., 1982). So although the EAT appeared to detect caseness in its validation sample, it may be less useful for detecting true eating disorder cases in nonclinical samples with lower prevalence rates.

Additional shortened forms of the EAT have been introduced. One such instrument, the EAT-12, was created by another group of researchers who used four items from each of the three EAT-26 scales. The items were chosen on the basis of high factor loadings (see Garner et al., 1982) and for their clinical importance (Lavik, Clausen, & Pedersen, 1991). The EAT-12 has not been widely adopted, conceivably due to evidence that it can produce high rates of false negatives (i.e., individuals with eating disorders who score below the clinical cutoff score) in nonclinical samples (Engelsen &

Laberg, 2001). Another shortened version of the EAT, the EAT-16 (Ocker, Lam, Jenson, & Zhang, 2007), is the focus of the current study.

## **Validity of the EAT**

### **Criterion Validity**

The criterion validity of the EAT-40 was established by its ability to distinguish between women with AN diagnoses and normal controls (Garner & Garfinkel, 1979). Garner and colleagues showed that EAT-26 scores were highly predictive of scores on the EAT-40, which provided support for the EAT-26's criterion validity (Garner et al., 1982). Garner and Garfinkel (1979) selected a cutoff score of 30 for the EAT-40, which allowed no false negatives in their sample. Accuracy, or a measure's overall rates of correctly classifying individuals both with and without diagnoses, is contingent upon the measure's cutoff score. The cutoff score established for the EAT-26 was 20, because it achieved a similar accuracy to that of the EAT-40 (Garner et al., 1982).

### **Convergent Validity**

When the EAT-26 was introduced, its total score and factor scores were correlated with other measures of anorexic symptomatology, indicating convergent validity (Garner et al., 1982). Subsequently, the validity of the EAT-26 was tested with another commonly-used ED measure, the Eating Disorder Inventory (EDI; see reviews such as Anderson, Lundgren, Shapiro, & Paulosky, 2004; Kashubeck-West et al., 2001; Túry et al., 2010; Williamson et al., 1995). The EDI (Garner, Olmstead, & Polivy, 1983) and its second version, the EDI-2 (Garner, 1991) assess ED-related behavior and personality characteristics. The EDI-2 contains all of the items from the EDI, plus 27 additional items. The EDI contains 8 subscales and the EDI-2 contains 11 subscales.

The EAT-26 total score was correlated with the EDI subscales referred to as the clinical scales (Body Dissatisfaction, Drive for Thinness, and Bulimia) in two clinical samples (Berland, Thompson, & Linton, 1986; Gross, Rosen, Leitenberg, & Willmuth, 1986). These two measures are correlated in nonclinical samples as well. For example, the original versions of these measures (EAT, EDI) showed high correlations between both total scores and scale scores (Raciti & Norcross, 1987), and significant correlations were detected among two EDI-2 scale scores (Drive for Thinness and Body Dissatisfaction) and five new EAT-26 scales resulting from a factor analysis (Doninger, Enders, & Burnett, 2005). Taken together, these results show that the EAT-26 and the EDI-2 are reliably correlated in nonclinical and clinical groups.

### **Discriminant Validity**

Discriminant validity reflects the principle that a measure should not be significantly correlated with other constructs from which it is theoretically distinct (Campbell & Fiske, 1959). Little research addresses the discriminant validity of the EAT-26. Several studies referring to discriminant validity of the EAT-26 actually tested the measure's discrimination between individuals with and without diagnosable EDs; namely, *criterion* validity (e.g., Boyadjieva & Steinhausen, 1996; Canals, Carbajo, & Fernandez-Ballart, 2002). Garner et al. (1982) found that both the EAT-26 and the EAT-40 had nonsignificant correlations with measures of anxiety, interpersonal sensitivity, and obsessiveness, and the EAT-26 had nonsignificant correlations with depression. As these constructs are distinct from ED pathology, these results support the ability of the EAT to assess eating pathology specifically, rather than overall distress or other psychopathology.

## Factor Structure

The psychometric properties of the EAT-26 have received support, indicating that its widespread use is largely justified. However, one aspect of the EAT's validity, its factor structure, has not been supported consistently. As an example, the three-factor structure of the EAT-26 has not been replicated in nonclinical samples. First, a 20-item, four-factor structure was found with a sample of female Israeli soldiers. The EAT-26 Dieting and Food Preoccupation factors were essentially reproduced. A few items from the EAT-26 Oral Control factor were retained, creating a factor of the same name. The new, fourth factor was labeled Awareness of Food Contents (Koslowsky et al., 1992).

Second, in a sample of Hispanic women living on the US-Mexico border, a 17-item, five-factor structure of the EAT-26 emerged. Factors for Dieting and Preoccupation with Food still existed, in keeping with the factor structure of the EAT-26, but the items differed substantially from those of the original EAT-26 factors. Other factors did not resemble the EAT-26 factors. One factor, Slow Eating, contained a single item. The remaining factors were named Others' Opinions and Fear of Fat. The researchers emphasized that given the marked lack of fit of the original EAT-26 factor structure, the EAT-26 should be used with caution with Hispanic women (Rutt & Coleman, 2001).

Third, as mentioned previously, a study of female college athletes produced a five-factor structure of the EAT-26 (Doninger et al., 2005). The researchers attempted to replicate the EAT-26 three-factor structure, as well as the factor structures described above (four factors [Koslowsky, 1992] and five factors [Rutt and Coleman, 2001]); none yielded an acceptable fit. Therefore, an exploratory factor analysis yielded a novel five-factor model with 20 items. One factor, Drive for Thinness, was similar to Dieting (EAT-



26; Garner et al., 1982) or Fear of Fat (Rutt & Coleman, 2001). A Food Preoccupation factor resembled both the EAT-26 factor with the same name and Rutt and Coleman's factor named Preoccupation with Food. A factor labeled Others' Opinions was similar to Rutt and Coleman's (2001) factor of the same name. Purging Behavior contained just two items, and Dieting Behavior had some resemblance to Dieting factors from the EAT-26 and the Koslowsky et al. (1992) model.

In summary, these factor analyses did not successfully replicate the EAT-26 factor structure, though factors produced from these analyses resembled EAT-26 factors in content. Some factors had only one or two items, which could suggest factor structures that are not cohesive. Notably, each yielded a shortened measure, suggesting that not all EAT-26 items are relevant in nonclinical samples. Importantly, none of these empirically-derived factor structures was subsequently replicated, though Doninger and colleagues (2005) attempted to do so. However, one alternative EAT factor structure, the EAT-16, was obtained by confirmatory factor analysis *and* was confirmed in a separate sample.

### **The EAT-16**

The EAT-16 was identified by Ocker and colleagues (2007). In a sample of female undergraduates, the researchers attempted to replicate the three-factor structure of the EAT-26, but were unable to do so. They also were unsuccessful in their attempt to replicate Koslowsky et al.'s 20-item four-factor model (1992). Therefore, they constructed a 16-item EAT based on the Koslowsky 20-item EAT. The Koslowsky EAT had retained very few items from the EAT-26 Oral Control scale; Ocker et al. removed the remaining Oral Control items to form the 16-item EAT. Three factors were proposed:

Dieting, Awareness of Food Contents, and Preoccupation. Ocker and colleagues tested this model in another sample of college women. The model did not fit, so Ocker and colleagues tested a four-factor model, retaining the 16 items used in the previous analysis, but splitting the Dieting scale into two. This factor structure provided a good fit to the data. Thus, the 16-item EAT contains four factors: Self-Perception of Body Shape, Dieting, Food Preoccupation, and Awareness of Food Contents. The researchers state that Self-Perception of Body Shape represents an important component of AN symptomatology, and therefore is a logical factor for this measure (Ocker et al., 2007).

The EAT-16 four-factor structure recently was confirmed in a separate sample of Hispanic and Caucasian undergraduates (Belon et al., 2011). The EAT-26 factor structure did not fit this data, while the Ocker et al. EAT-16 factor structure provided a good fit. A measurement invariance analysis, which made a comparison of the EAT-16 properties (e.g., loadings, intercepts) across groups, established invariance of the EAT-16 four-factor structure across Caucasian and Hispanic groups. These results suggest that overall scores on the EAT-16 are comparable across white and Hispanic samples. This appears to be the first time that any alternate EAT factor structure obtained via factor analysis was confirmed in a second dataset.

### **The Role of Ethnicity and Culture**

As the EAT-16 factor structure was invariant across Hispanic and Caucasian groups (Belon et al., 2011), this measure may prove useful in Hispanic populations. Still, further investigation of its validity is required. Research clearly shows that Hispanic women experience disordered eating at rates similar to Caucasian women, and some studies even discovered that Hispanic women were at higher risk for certain ED

symptoms (Brown, Cachelin, & Dohm, 2009). Researchers found that rates of binge eating in Hispanic samples were either comparable to those endorsed by white samples (Alegria et al., 2007; Crago & Shisslak, 2003) or higher (Fitzgibbon et al., 1998). A meta-analysis suggested that Hispanic women's degree of body dissatisfaction was on par with that of white women (Grabe & Hyde, 2006). Therefore, it is important to test the validity of the EAT-16 with Hispanic individuals.

One issue that likely affects disordered eating in Hispanic samples is acculturation; the process of adopting a dominant culture's norms as opposed to retaining one's own cultural norms. Higher acculturation to white American culture has been associated with EDs in Hispanic women (Cachelin, Phinney, Schug, & Striegel-Moore, 2006; Gowen, Hayward, Killen, Robinson, & Barr Taylor, 1999; Stein, Corte, & Ronis, 2010), and research suggests that level of identification with white culture is likely to affect individuals' susceptibility to EDs (Miller & Pumariega, 2001; Soh, Touyz, & Surgenor, 2006). One measure which assesses cultural identification is the Orthogonal Cultural Identification Scale (OCIS; Oetting & Beauvais, 1991).

### **The Current Study**

Given that the factor structure of the EAT-16 was supported by two separate groups of researchers, there was impetus for continued investigation. The EAT-16 has not been adopted as a research or clinical tool despite the fact that its abbreviated length and easily understood language potentially make it an ideal screening measure. Its promising research support, particularly in light of inadequate support for other EAT factor structures, invited further testing. And the measure held promise for use in *nonclinical* samples, as it was created and replicated in nonclinical groups. In particular, its potential

use in college samples is noteworthy due to the high prevalence of EDs in these populations (Striegel-Moore et al., 2003). The current study assessed factorial, convergent, and criterion validity of the EAT-16.

### **Hypothesis 1: The Role of Ethnicity and Culture**

Preliminary analyses investigated ethnic group differences in age, BMI, and EAT-16 total score. Next, the OCIS results (cultural identification ratings) of the ethnic groups were compared. Hypotheses were based on results found in a similar sample by Belon et al. (2011).

- (a) It was expected that individuals who identified their ethnicity as Hispanic would have higher levels of Mexican American identification on the OCIS than individuals who identified as Caucasian.
- (b) The Hispanic group was expected also to show high levels on the Anglo identification scale

Due to the expectation that acculturation to the U.S. culture plays a role in the etiology of eating disorders, the relationship between cultural identification and EAT-16 scores was investigated. Though one might hypothesize that Anglo orientation would be correlated with EAT-16 scores, Belon et al. (2011) did not obtain this result in a similar sample.

- (c) Anglo orientation was not expected to be correlated with EAT-16 scores in the overall sample.
- (d) Anglo orientation was not expected to be correlated with EAT-16 scores in the Hispanic group.

- (e) Anglo orientation was not expected to be correlated with EAT-16 scores in the Caucasian group.

### **Hypothesis 2: Factor Structure**

- (a) It was expected that the four-factor structure of the EAT-16 would be replicable in this sample.
- (b) The four factor structure was expected to be invariant across the Hispanic and Caucasian groups.

### **Hypothesis 3: Convergent Validity**

The EAT-16 was expected to be highly correlated with other measures of similar constructs, including the EDI-2, EDE-Q, and Block Rapid Food Screener:

- (a) The EAT-16 total score was expected to be correlated with the EDI-2 total and clinical scale scores, and the EDE-Q total score.
- (b) The EAT-16 Dieting factor was expected to be significantly positively correlated with the Block fruit/vegetable scale and significantly negatively correlated with the Block fat scale.
- (c) It was predicted that the EAT-16 Awareness of Food Contents factor would be significantly positively correlated with the Block fruit/vegetable scale and significantly negatively correlated with the Block fat scale.
- (d) The EAT-16 Self-perception of Body Shape factor was expected to be significantly negatively correlated with the Block fat scale.
- (e) The EAT-16 Food Preoccupation factor was not expected to be significantly correlated with either the fruit/vegetable scale or the fat scale.

### **Hypothesis 4: Criterion Validity**

- (a) Individuals with EDs were expected to have higher EAT-16 total scores than individuals without EDs.
- (b) Individuals with past EDs were expected to have higher EAT-16 total scores than individuals without EDs.
- (c) Individuals with past EDs were expected to have lower EAT-16 scores than individuals with current EDs.

Diagnoses were obtained via the Structured Clinical Interview for DSM-IV Axis I disorders (SCID; First, Spitzer, Gibbon, & Williams, 2002).

Receiver operating characteristic (ROC) curve analysis was used to determine the optimal cutoff score for the EAT-16. To provide a reference for the expected EAT-16 performance, the performance of the EAT-26 was examined in this sample. The EAT-26 sensitivity, specificity, and accuracy were obtained, using its cutoff score of 20, and compared to the obtained EAT-16 sensitivity, specificity, and accuracy. *Sensitivity* refers to the ability of a measure to accurately assign diagnoses to individuals who have pathology, and *specificity* refers to the ability of a measure to accurately label individuals who do not have pathology (Lalkhen & McCluskey, 2008). As Garner and Garfinkel's cutoff score was established only on the basis of current diagnosis, the cutoff score in this study relied exclusively on the current diagnosis as well.

## **Methods**

### **Participants**

Data were collected on a sample of undergraduate women at the University of New Mexico (UNM) as part of a larger study. Initially, 637 women participated. The data for 127 of these individuals were removed because they self-identified as an ethnicity

other than Hispanic or Caucasian. An additional 17 people who were over age 40 had their data removed, as eating disorders are less common in women over 40 (Hudson et al., 2007). Another three people had their data removed due to insufficient diagnostic information on the SCID. Thus, the final dataset consisted of 490 women. This study was approved by the UNM Institutional Review Board (see Appendix A for the consent form).

## **Materials**

**Demographics form.** A demographics form designed by the researchers (Appendix B) obtained self-reported height, weight, age, ethnicity, marital status, and education status. Height and weight are used to calculate body mass index (BMI). BMI is a marker of weight status, calculated by the individual's weight in kilograms divided by his/her height in meters squared. In adults, the normal range for BMI is 18.5 to 24.9.

**The Orthogonal Cultural Identification Scale (OCIS;** Oetting & Beauvais, 1990). This measure asks participants to report their levels of identification with several cultural groups (Appendix C). For each of six items reflecting things people do or believe, respondents indicate to what degree they identify with each of four cultures: 1) White-American or Anglo, 2) Mexican-American or Spanish, 3) American Indian, and 4) Black-American. A blank space allows participants to indicate their level of identification with a cultural group other than the four listed. An example item is, "In the future with your family, will you do special things together or have special traditions that are based on the \_\_\_\_\_ culture?" For each item, an individual responds on a 4-point scale ranging from 1 (none/not at all) to 4 (a lot) for *each* of the cultures listed. A cultural identification score for each culture is obtained by averaging responses over the six items.

Scores of three or more indicate high identification, and scores of one or less are associated with low identification (Oetting & Beauvais, 1990).

The reliability of the OCIS was demonstrated in several cultural groups, including Mexican Americans (Johnson, Wall, Guanipa, Terry-Guyer, & Velasquez, 2002; Oetting & Beauvais, 1990; Oetting, Swaim, & Chiarella, 1998), and factor analyses confirmed its factor structure (Oetting & Beauvais, 1990; Oetting et al., 1998). The OCIS also showed convergent validity with other measures of cultural identity (Johnson et al., 2002; Venner, Wall, Lau, & Ehlers, 2006). For the two scales used in this study, the Cronbach's alpha values were .93 (Anglo) and .98 (Mexican American).

**Eating Attitudes Test-26 (EAT-26) and the Eating Attitudes Test-16 (EAT-16).** The items on the EAT assess thoughts and behaviors with simple statements, such as "I am terrified about being overweight" (see Appendix D for the EAT-26 and Appendix E for the EAT-16). Respondents indicate how frequently they experience each thought or behavior, with response options ranging from "Never" to "Always." Standard scoring of the EAT assigns item scores ranging from 0 to 3, with 3 corresponding to the most severe response ("Always"), 2 corresponding to "Usually", 1 corresponding to "Often", and 0 representing "Sometimes", "Rarely", and "Never" (Garner & Garfinkel, 1979). In order to increase the variability of responses in the current study, the measure was also scored from 1-6, with 6 corresponding to "Always" and 1 corresponding to "Never." This scoring scheme was used in other research with the EAT, particularly with nonclinical samples (e.g., Belon et al., 2011; Doninger et al., 2005; Ocker et al., 2007). In the present sample, Cronbach's alpha was .89 for the EAT-26, and .92 for the EAT-16. The 10 items that are part of the EAT-26 but not the EAT-16 are in Appendix F.



**Eating Disorders Inventory-2 (EDI-2; Garner, 1991).** Participants respond to each item on the EDI-2 (Appendix G) by indicating how frequently they do or feel certain things, such as "I think my stomach is too big." Six response choices range from "Never" to "Always". The standard EDI-2 scoring system is the same as that of the EAT, in which a range of 0-3 is created, with 3 corresponding to "Always." However, in this study the measure was scored from 1-6, with 1 corresponding to "Never" and 6 corresponding to "Always." As with the EAT, the goal of this scoring system was to maximize the variability of obtained responses. This method of scoring is recommended when the EDI is used in nonclinical populations (Schoemaker, van Strien, & van der Staak, 1994).

The EDI-2 scales have good test-retest reliability ( $r=.67$  to  $r=.82$ ; Anderson et al., 2009). The instrument distinguishes between clinical and nonclinical populations on the basis of all subscale scores (Espelage et al., 2003), and within clinical populations there is evidence for distinctions between scores of patients with AN and BN on the three clinical scales (Garner et al., 1983). In addition, the concurrent validity of the scales of the EDI was demonstrated in several samples, including undergraduate women and women with EDs (Berland, Thompson, & Linton, 1986; Garner et al., 1983; Raciti & Norcross, 1987). The EDI also has acceptable test-retest reliability and stability in undergraduate women (Crowther, Lilly, Crawford, & Shepherd, 1992; Wear & Pratz, 1987). Cronbach's alpha in the present sample was .96.

**Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994).** The EDE-Q (Appendix H) was derived from the Eating Disorder Examination interview (EDE; Cooper & Fairburn, 1987), a comprehensive diagnostic measure of the

pathology of EDs. The creators of this measure conceptualized EDs as complex syndromes characterized by core maladaptive beliefs about the importance of weight and appearance (Cooper & Fairburn, 1987). The EDE-Q and EDE are widely used and considered to be the gold standard ED assessments (Berg, Peterson, Frazier, & Crow, 2012). The EDE-Q has four subscales: Restraint, Eating Concern, Weight Concern, and Shape Concern (Anderson et al., 2009). Patients respond to eating- or body-related questions such as "Have you had a definite desire to have an empty stomach with the aim of influencing your shape or weight?" They indicate the frequency or intensity of each behavior over the past 28 days. Each item is scored on a scale of 0 to 6, and item scores of 4 or more are considered to be in the clinical range. Higher scores indicate greater severity (Anderson et al., 2009).

Cronbach's alphas above .7 have previously been found for each of the subscale scores and the total scale. The EDE-Q is highly correlated with the EDE interview ( $r=.6$  or greater for each of the EDE-Q/EDE subscales (Anderson, De Young, & Walker, 2009; Carter, Stewart, & Fairburn, 2001). The EDE interview has excellent psychometric properties. Specifically, the EDE discriminates between controls and individuals with ED (criterion validity; Cooper, Cooper, & Fairburn, 1989). Its concurrent validity was supported with behavioral measures of disordered eating assessed with a food frequency recall questionnaire (Rosen, Vara, Wendt, & Leitenberg, 1990). The EDE subscales have good internal consistency, with Cronbach's alphas for each of the EDE subscales between .67 and .90 (Cooper, Cooper, & Fairburn, 1989). In the present sample, Cronbach's alpha for the overall measure was .90.

**Block Rapid Food Screener.** The Block Rapid Food Screener (Block et al., 2000; Appendix I) obtains retrospective estimates of individuals' consumption of selected foods for a three-month period. It yields two scales: fruit/vegetable intake and fat intake. Participants indicate how often they ate certain foods (fruits, vegetables, or items containing fat) over the last three months, on a scale ranging from 0 (once a month or less) to 5 (two or more times per day). In line with earlier work (Block, Block, Wakimoto, & Block, 2004), the present study calculated mean fruit and vegetable intake from the fruit and vegetable scale total, and mean fat intake from the fat scale total.

This rapid screener was developed from a 100-item food frequency questionnaire (Block et al., 1986), and the two measures are highly correlated (Block et al., 2000). The longer version's validity was supported by its correlation with daily diet records for periods as long as 12 -16 days (Block et al., 2000; Gary et al., 2004). Eating at fast food restaurants is highly positively correlated with responses on the Block fat scale and negatively correlated with the Block fruit and vegetable scale (Arcan, Kubik, Fulkerson, Hannan, & Story, 2011). The Block Rapid Food Screener has demonstrated good internal reliability and test-retest reliability (Arcan et al., 2011; Wakimoto, Block, Mandel, & Medina, 2006). The Cronbach's alpha values for the two scales were .74 (fat) and .62 (fruit/vegetable).

In accordance with methodology used by Belon (2012), the fruit/vegetable scale was modified to better capture healthy eating. Several items on the measure were removed: (1) "fruit juice," because fruit juices are low in fiber and high in calories (Flood-Obbagy & Rolls, 2009), (2) "vegetable juice" because vegetable juices tend to be high in sodium and low in fiber (Zeratsky, 2012), and (3) "potatoes" because it includes

French fries, which are high in calories and saturated fat (Batis, Hernandez-Barrera, Barquera, Rivera, & Popkin, 2011). These changes resulted in four items to assess intake of fresh fruits and vegetables on the revised version of the fruit/vegetable scale.

**Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I).** The Eating Disorders module of the SCID-I was used to assess eating disorder diagnoses. This semi-structured interview, the gold standard in psychiatric diagnosis (First et al., 2002), allows for a differential diagnosis of AN, BN, binge eating disorder, or the more general EDNOS (See Appendix J).

### **Procedure**

Participants were recruited from undergraduate psychology courses and received course credit for participating. A web-based experiment management system allowed potential participants to read about study procedures before enrolling, and to enroll online if they were interested. The study description read, "This study seeks to understand more about how different women experience their body and their weight. Women who agree to participate will undergo an interview about their eating habits and weight. They will also fill out several questionnaires related to how they feel about their bodies and their attitudes toward eating. Other options of obtaining course credit are available. Information about these options can be provided by your course instructor." The study was open only to females age 18 and older. The study was conducted in group sessions during which procedures were explained, questions were addressed, and participants gave their informed consent to participate. Each participant completed her own questionnaires and met privately with a researcher for the diagnostic interview (either the present author or another graduate student). The entire laboratory session took up to two hours.

Interviewers received training on administering the SCID from a clinical psychologist experienced in working with eating disorders. The interviews were tape recorded.

Reliability checks were performed in which the clinical psychologist listened to 15% of the interviews. Reliability interviews were oversampled from among the interviews to which the interviewers had assigned diagnoses.

### **Analyses**

One-way ANOVA and one-way ANCOVA were used to assess continuous demographic variables. Chi-square tests of independence were used to assess categorical demographic variables (Hypothesis 1).

To address Hypothesis 2, an initial multiple group confirmatory factor analysis (CFA) was undertaken to see whether the four-factor model of the EAT-16 provided a good fit to the data. A subsequent formal test of measurement invariance was planned in order to examine the measure's ability to assess the same constructs in the same way across groups. Measurement invariance analysis attempts to fit a series of increasingly restrictive models across groups, beginning with configural invariance, in which the same items must load on the same factors in both groups. The next step, metric invariance, specifies that the factor *loadings* must be able to be assumed equivalent across both groups. Then, scalar invariance specifies that the intercepts must be able to be assumed equivalent. Next, item uniqueness must be the same across groups. Finally, residual variances must be the same across groups.

In the event that the four-factor structure did not fit the data in either the overall sample or in any ethnic group, an exploratory factor analysis (EFA) was planned. EFA is

a data-driven approach to examining the relationships between items and underlying common factors (Fabrigar, Wegener, MacCallum, & Strahan, 1999).

To address Hypothesis 3, Pearson's product-moment correlation coefficient ( $r$ ) was used to test convergent validity. To address Hypothesis 4, one-way ANOVA was used to assess diagnostic group differences in EAT-16 scores. Receiver operating curve analysis produced accuracy values, which were tested with McNemar's chi-square test. The area under the curve (AUC) was obtained for each measure. AUCs represent tests' diagnostic abilities, with an AUC of 1 indicating perfect accuracy, and an AUC of .5 indicating that the measure performs no better than chance (Streiner, 2003). Differences in AUC were tested with a standardized score adjusted for correlation (Hanley & McNeil, 1983).

## **Results**

### **Demographics for Overall Sample**

Overall and group means on age and BMI are in Table 1, along with other demographic information. A total of 194 participants (39.6%) identified themselves as Caucasian, whereas 246 participants (50.2%) identified as Hispanic. An additional 50 people (10.2%) reported that they were half-Hispanic. Given the sizeable number of individuals who self-identified as half-Hispanic, it was decided to treat these individuals as a distinct (third) ethnic group in all remaining analyses. Of all individuals who reported being half-Hispanic, the majority were half Caucasian (33; 66%), four were half Native American (8%), four were half Asian (8%), three were half Black (6%), and six provided responses from which the non-Hispanic part of their ethnicity could not be determined (12%). Demographics by ethnic group are in Table 2.

Table 1

*Demographics in Overall Sample*

Measures	Mean	SD	Range
Age	20.19	3.50	18-39
BMI	23.56	4.71	16.55-50.26
EAT-16 (1-6)	38.40	15.09	16-89
EAT-16 (0-3)	6.16	7.84	0-41
EAT-26 (1-6)	58.88	17.26	27-130
EAT-26 (0-3)	8.69	8.59	0-53
OCIS Anglo orientation	2.81	0.95	1.00-4.00
OCIS Mexican American orientation	2.58	1.12	1.00-4.00
OCIS Black orientation	1.09	0.29	1.00-3.67
OCIS American Indian orientation	1.13	0.37	1.00-3.83
<u>Marital status</u>	<u>Frequency</u>	<u>Percentage</u>	
Never married	448	91.4	
Married	34	6.9	
Divorced	7	1.4	
No response	1	.2	
<u>Educational status completed</u>	<u>Frequency</u>	<u>Percentage</u>	
High school only	240	49.0	
One year of college	94	19.2	
Two years of college	65	13.3	
Three years of college	71	14.5	
College	12	2.4	
Other	8	1.6	

*Note.* Demographic and descriptive information is presented here for the overall sample. EAT-16 (1-6) and EAT-26 (1-6) indicate the scoring system in which the EAT answer choices are scored from 1 (Never) to 6 (Always). EAT-16 (0-3) and EAT-26 (0-3) indicate the scoring system in which the EAT answer choices are scored from 0 (Never, Rarely, Sometimes) to 3 (Always). OCIS is Orthogonal Cultural Identification Scale.

Table 2

*Demographics by Ethnic Group*

	<u>Caucasian group</u>			<u>Hispanic group</u>			<u>Half-Hispanic group</u>		
	<u>Mean</u>	<u>SD</u>	<u>Range</u>	<u>Mean</u>	<u>SD</u>	<u>Range</u>	<u>Mean</u>	<u>SD</u>	<u>Range</u>
Age	20.83	4.26	18-39	19.76	2.83	18-38	19.86	2.81	18-36
BMI	22.80	4.11	16.55-41.53	24.36	5.08	16.91-50.26	22.61	4.36	18.21-36.75
EAT-16 (1-6)	39.77	16.29	16-89	37.64	14.06	16-76	36.76	15.01	16-83
EAT-16 (0-3)	6.70	8.85	0-41	5.79	7.02	0-33	5.86	7.47	0-36
EAT-26 (1-6)	60.6	18.84	27-130	57.92	15.83	28-112	56.98	17.39	29-109
EAT-26 (0-3)	9.30	9.66	0-53	8.30	7.71	0-39	8.29	8.40	0-39
OCIS Anglo orientation	3.37	0.70	1.00-4.00	2.28	0.88	1.00-4.00	3.07	0.80	1.00-4.00
OCIS Mexican American orientation	1.50	0.68	1.00-4.00	3.38	0.67	1.00-4.00	2.72	0.82	1.00-4.00
OCIS Black orientation	1.06	0.21	1.00-2.50	1.10	0.31	1.00-3.67	1.18	0.47	1-2.83
OCIS American Indian orientation	1.09	0.31	1.00-3.50	1.15	0.34	1.00-3.33	1.22	0.64	1.00-3.83

*Note.* Demographic and descriptive information is presented here for each ethnic group. OCIS is Orthogonal Cultural Identification Scale.



## The Role of Ethnicity and Culture

The first analyses tested for demographic differences based on self-identified ethnicities. One-way ANOVAs showed that the ethnic groups differed significantly on age,  $F(2) = 5.46, p = .005$ . Post-hoc tests showed that Hispanic participants were significantly younger than Caucasian participants,  $t(1) = 3.20, p = .001$ , though half-Hispanic individuals did not differ significantly in age from either of the other two groups. An ANOVA for BMI was also significant,  $F(2) = 7.28, p = .001$ . Post-hoc tests showed that Caucasian and half-Hispanic participants did not differ significantly on BMI, while Hispanic participants had significantly higher BMIs than Caucasian and half-Hispanic participants,  $F(1) = 14.53, p < .001$ . Mean BMIs were in the normal range in all groups.

Table 3 presents information on participants' weight status in the overall sample and by ethnic group. Chi-square tests examining ethnic group differences indicated that: a higher proportion of Caucasian than Hispanic individuals were underweight,  $\chi^2(1) = 7.38, p = .007$ ; a higher proportion of Hispanic than Caucasian individuals were overweight or obese,  $\chi^2(1) = 8.29, p = .004$ ; and a higher proportion of Hispanic than half-Hispanic individuals were overweight or obese,  $\chi^2(1) = 3.84, p = .050$ . No other tests of the proportions of underweight, normal weight, or overweight or obese individuals were significant across ethnic groups.

Table 3

*Frequencies and Percentages of Each Weight Status in the Overall Sample and Ethnic Groups*

	Overall sample	Caucasian group	Hispanic group	Half-Hispanic group
Underweight	37 (7.6%)	22 (11.3%)	11 (4.5%)	4 (8.0%)
Normal weight	315 (64.3%)	129 (66.5%)	150 (61.0%)	36 (72.0%)
Overweight	136 (27.8%)	42 (21.7%)	84 (34.1%)	10 (20.0%)
Missing	2 (.3%)	1 (.5%)	1 (.4%)	0 (0%)

*Note.* Frequencies and percentages listed are per group.

As ethnic group differences were found on age and BMI, these variables were included as covariates in an analysis of covariance (ANCOVA) testing ethnic group differences in EAT-16 scores. Two ANCOVAs were run, for 1-6 and 0-3 scoring. The ANCOVA for 0-3 scoring was significant,  $F(2)=4.35, p=.002$ . There was a significant effect of BMI on EAT-16 total scores,  $p<.001$ , but controlling for this effect there were no significant differences in EAT-16 scores by ethnic group. The ANCOVA for 1-6 scoring was significant,  $F(2)=8.71, p<.001$ . There was a significant effect of BMI on EAT-16 total scores,  $p<.001$ . Controlling for this effect, there was a significant difference in EAT-16 total scores for the Hispanic and Caucasian groups,  $t(1)=-2.20, p=.028$ . Specifically, the Caucasian group mean EAT-16 score was significantly higher than the Hispanic group mean EAT-16 score. No other ethnic group differences on EAT-16 scores were found.

To investigate acculturation, the scores for each ethnic group on the OCIS Anglo and Mexican American identification scales were compared using ANCOVA, with age and BMI as covariates. The overall ANCOVA for Mexican American identification was significant,  $F(2)=.188.97, p <.001$ . The effects of age and BMI were not significant. Post-

hoc tests showed that, as predicted (Hypothesis 1a), the Hispanic group mean was significantly higher than the Caucasian group mean,  $t(1)=26.51, p<.001$ . As far as Anglo orientation, the overall ANCOVA was significant,  $F(2)=48.34, p<.001$ . The effects of age and BMI were not significant. On the Anglo scale, the Caucasian group mean was significantly higher than the Hispanic group mean,  $t(1)=-13.37, p<.001$ , though the Hispanic group mean was in the moderate range (Hypothesis 1b). The hypothesis that Hispanic individuals would endorse high identification toward *both* Mexican American and Anglo culture was only partially supported, as the Hispanic group showed high Mexican American identification but moderate Anglo identification. Post-hoc contrasts also provided significance testing for the ethnic identification of the half-Hispanic group. Individuals who were half-Hispanic had Anglo orientation scores that were significantly higher than those of Hispanic individuals,  $t(1)=-5.86, p<.001$ , and significantly lower than those of Caucasian individuals,  $t(1)=-2.30, p=.022$ . Individuals who were half-Hispanic had Mexican American orientation scores that were significantly lower than those of Hispanic individuals,  $t(1)=5.76, p<.001$ , and higher than those of Caucasian individuals,  $t(1)=10.39, p<.001$ .

Based on past results, it was also predicted that Anglo identification would be uncorrelated with EAT-16 scores in the overall sample or in the Hispanic or Caucasian groups (Hypotheses 1c-e). This prediction was supported for both the 0-3 and 1-6 scoring methods. There was also no significant correlation between EAT-16 scores and Anglo orientation in the half-Hispanic group. In addition, no significant correlation was found between Mexican American identification and EAT-16 scores in any of the ethnic groups.

## Factor Structure

It was expected that the previously supported four-factor structure of the EAT-16 would be replicable in this sample (Hypothesis 2a), and that the factor structure would be invariant across the Hispanic and Caucasian groups (Hypothesis 2b). Again, though it had not been planned as part of the original hypotheses, the half-Hispanic group was treated as a third ethnic group.

The analyses were performed in Mplus version 7.11 (Muthén & Muthén, 2012). To preserve variability in the sample, the EAT-16 data with 0-6 scoring was used. The data were log-transformed, as they were extremely non-normal. The multiple-group CFA produced a model with a moderate fit according to the criteria set out by Hu and Bentler (1999): CFI=.83, TLI=.82, RMSEA=.10, SRMR=.09. Hu and Bentler specify that multiple fit indices should be used, and optimal values are CFI and TLI>.90, RMSEA<.06, and SRMR<.05. As the fit parameters were each nearing these recommended levels, the four-factor model was tested in each of the three ethnic groups alone. The four-factor model produced a nearly acceptable fit in the Caucasian group, CFI=.91, TLI=.89, RMSEA=.08, SRMR=.07, and a similarly acceptable fit in the Hispanic group, CFI=.85, TLI=.81, RMSEA=.09, SRMR=.07. The four-factor model had an unacceptable fit in the half-Hispanic group, CFI=.57, TLI=.48, RMSEA=.20, SRMR=.13. Thus, the planned measurement invariance analysis was conducted for the Hispanic and Caucasian groups, and an EFA was conducted in the half-Hispanic group in order to determine an acceptable factor structure for this group.

The measurement invariance analysis provided support for metric invariance of the model across the Hispanic and Caucasian groups. The configural model, which tested

whether the factors contained the same items across groups, showed a moderate fit, CFI=.88, TLI=.85, RMSEA=.09, SRMR=.07. The metric model, testing that the factor loadings were the same across groups, did not have a significantly worse fit than the configural model (CFI=.88, TLI=.86, RMSEA=.09, SRMR=.08). The scalar model, testing that the item intercepts were the same across groups, provided a significantly worse fit than the metric model,  $\chi^2$  difference = 24.02,  $p$ =.02. Thus, metric, or weak, invariance was supported for the EAT-16 across Caucasian and Hispanic groups. The factor structure and loadings are in Table 4.

Table 4

*Factor Structure in Caucasian and Hispanic Groups*

Factors and Items	Loadings, Caucasian	Loadings, Hispanic
<u>Self-Perception of Body Shape</u>		
Am terrified about being overweight.	.77 (.74)	.69 (.75)
Am preoccupied with a desire to be thinner.	.74 (.88)	.92 (.88)
Am preoccupied with the thought of having fat on my body.	.86 (.82)	.51 (.82)
<u>Dieting</u>		
Feel extremely guilty after eating.	.48 (.81)	.74 (.81)
Think about burning up calories when I exercise.	.74 (.66)	.41 (.66)
Feel uncomfortable after eating sweets.	.66 (.69)	.62 (.69)
Engage in dieting behavior.	.79 (.79)	.69 (.79)
Like my stomach to be empty.	.53 (.69)	.30 (.69)
<u>Food Preoccupation</u>		
Find myself preoccupied with food.	.80 (.75)	.53 (.73)
Have gone on eating binges where I feel that I may not be able to stop.	.63 (.68)	.84 (.66)
Feel that food controls my life.	.83 (.85)	.74 (.84)
Give too much time and thought to food.	.81 (.88)	.68 (.87)
<u>Awareness of Food Contents</u>		
Aware of the calorie content of foods that I eat.	.59 (.67)	.65 (.64)
Particularly avoid foods with a high carbohydrate content (e.g. bread, rice, potatoes, etc.).	.67 (.77)	.75 (.75)
Avoid foods with sugar in them.	.65 (.70)	.40 (.68)
Eat diet foods	.72 (.70)	.66 (.68)

*Note.* The EAT-16 items are listed with the factors on which they loaded most highly. Factor loadings obtained in the present study are listed, along with Belon et al. (2011) loadings in parentheses. Factor loadings were geomin rotated.

The most acceptable model for the EAT-16 among the half-Hispanic participants in the present data had four new factors. These factors are presented in Table 4 along with their factor loadings. Oblique (geomin) rotation was used in order to allow factors to be correlated. Maximum likelihood estimation was used for missing data. The fit indices for the new four-factor model showed a moderate fit: CFI=.93, TLI=.86, RMSEA=.11, SRMR=.06.

Table 5

*Factor Structure in Half-Hispanic Group*

Items	Loadings
<u>Factor 1</u>	
Am terrified about being overweight.	.83
Am preoccupied with the thought of having fat on my body.	.93
Give too much time and thought to food.	.44
Feel uncomfortable after eating sweets.	.35
<u>Factor 2</u>	
Find myself preoccupied with food.	.47
Have gone on eating binges where I feel that I may not be able to stop.	.68
Feel extremely guilty after eating.	1.1
Like my stomach to be empty.	.66
<u>Factor 3</u>	
Aware of the calorie content of foods that I eat.	.46
Particularly avoid foods with a high carbohydrate content (e.g. bread, rice, potatoes, etc.).	.61
Think about burning up calories when I exercise.	.38
Avoid foods with sugar in them.	.54
Eat diet foods	.70
Engage in dieting behavior.	.96
<u>Factor 4</u>	
Am preoccupied with a desire to be thinner.	.68
Feel that food controls my life.	1.1

*Note.* EAT-16 items and their loadings on each factor are listed.

### Convergent Validity

As hypothesized (Hypothesis 3a), the EAT-16 total score, in both the 0-3 and 1-6 scoring systems, was positively correlated with measures assumed to assess similar constructs. Table 6 contains the correlation coefficients.

Table 6

*Convergent Validity of EAT-16 Total Score*

	EDE-Q total	EDI-2 total	EDI-DT	EDI-B	EDI-BD
EAT-16 (1-6)	.84	.65	.87	.60	.65
EAT-16 (0-3)	.76	.56	.79	.53	.55

*Note.* Pearson's  $r$ s are listed. All correlations were significant at  $p < .01$ .

Planned analyses involving the four previously established EAT-16 scales, Self-Perception of Body Shape, Dieting, Food Preoccupation, and Awareness of Food Contents (Hypotheses 3b-e), were conducted in the group of Caucasian and Hispanic individuals. The half-Hispanic individuals were excluded, as the EAT-16 factor structure had been replicated in the Caucasian and Hispanic groups only. Nearly all hypotheses were confirmed. The EAT-16 Dieting and Awareness of Food Contents factor was significantly positively correlated with the fruit/vegetable scale (Hypotheses 3b and 3c). The EAT-16 Dieting, Awareness of Food Contents, and Self-perception of Body Shape factors were significantly negatively correlated with the fat scale (Hypotheses 3b-d). Contrary to expectations, the EAT-16 Food Preoccupation scale was significantly correlated with the fruit/vegetable scale and the fat scales for 0-3, but not 1-6, scoring (Hypothesis 3e). Correlation coefficients are presented in Table 7. Overall, the convergent validity of the EAT-16 was supported in these analyses.



Table 7

*Correlations between EAT-16 Factors and Block Factors (Caucasian and Hispanic Groups)*

EAT-16 0-3 scoring				
	<u>Self- Perception</u>	<u>DiETING</u>	<u>Preoccupation</u>	<u>Awareness</u>
Fruit/veg. scale	.04	.18**	.13**	.29**
Fat scale	-.14**	-.25**	-.12*	-.35**
EAT-16 1-6 scoring				
	<u>Self- Perception</u>	<u>DiETING</u>	<u>Preoccupation</u>	<u>Awareness</u>
Fruit/veg. scale	.04	.16**	.09	.35**
Fat scale	-.18**	-.24**	-.09	-.36**

*Note.* Pearson's  $r$  is shown for each EAT-16 factor with each Block factor. EAT-16 Factors: Self-Perception is EAT-16 Self-Perception of Body Shape; Preoccupation is EAT-16 Food Preoccupation; Awareness is EAT-16 Awareness of Food Contents; Block is Block Rapid Food Screener; Fruit/veg scale is Block fruit/vegetable scale.

\*\* Correlation significant at  $p < .01$ .

\* Correlation significant at  $p < .05$ .

### Criterion Validity

Reliability checks were conducted on 76 of the SCID diagnostic interviews (16%), and interrater reliability was high ( $\kappa=.89$ ). In total, 23 individuals (4.7% of the sample) were diagnosed with current EDs, including 20 (4.1%) with EDNOS, 2 (.4%) with BN, and 1 (.2%) with AN. A total of 31 individuals (6.3% of the sample) had past diagnoses. Six individuals (1.2%) had both past and current diagnoses (i.e., had an ED at the time of the interview and had previously had a *different* ED). Two individuals with past diagnoses (.4%) and seven individuals with no diagnoses (1.4%) were eliminated for incomplete EAT-16 data, leaving  $N=281$ . It was expected that individuals with current EDs would have higher EAT-16 total scores than individuals with past EDs or no EDs (Hypotheses 4c and 4a), and that individuals with past EDs would have higher EAT-16 total scores than individuals with no EDs (Hypothesis 4b). This prediction was partially

supported. A one-way ANOVA was significant,  $F(2) = 36.49, p < .001$ . Post-hoc comparisons indicated that the EAT-16 scores of individuals with current diagnoses ( $M = 57.26; SD = 11.84; \text{range} = 41-80$ ) and individuals with past diagnoses ( $M = 51.24; SD = 17.16; \text{range} = 19-83$ ) were significantly higher than those of individuals with no diagnoses ( $M = 36.52; SD = 13.97; \text{range} = 16-89$ ) but did not differ significantly from each other.

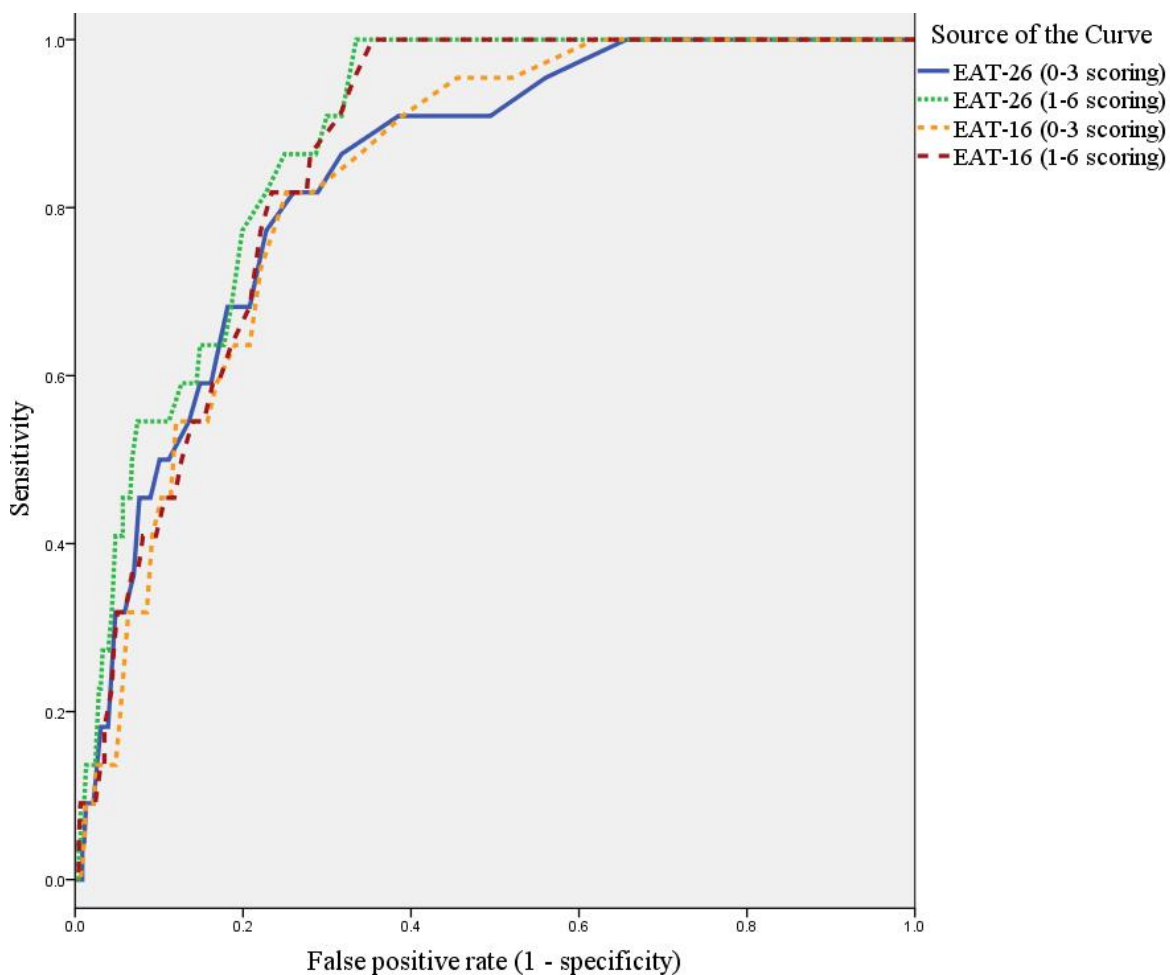
As planned, the utility of the EAT-26 cutoff score of 20 was examined in the present sample, using receiver operating characteristic (ROC) curve analysis. The goal was to provide perspective for interpretation of the performance of the EAT-16. The ROC analyses were conducted on individuals with complete data for both the EAT-16 and EAT-26 ( $N=479$ ). As mentioned above, nine participants (1.8%) were missing data on the EAT-16. An additional two participants (.4%), one of whom had a diagnosis and one of whom did not, were missing data on the EAT-26 only. The cutoff score of 20 is relevant when the EAT-26 is scored with the original 0-3 scoring system. In the present sample, this cutoff score produced a sensitivity of 50.0% and a false positive rate of 10.0%. The overall accuracy was 88.1%.

The ROC analyses provided information on the performance of the EAT-26 and the EAT-16 when each was scored on the 0-3 and 1-6 scales. One benefit of ROC curve analysis is the ability to assess the performance of a test at multiple cutoff points, taking into account the tradeoffs between sensitivity and specificity that are inherently necessary (McFall & Treat, 1999). The ROC curves (Figure 1) capture the tradeoffs involved in using the test. As can be seen in Figure 1, the sensitivity of both the EAT-16 and the EAT-26 scored 1-6 decreases quickly as false positive rates decrease. The AUCs

obtained for all four measures indicated diagnostic accuracy that was significantly better than chance. In this sample, the EAT-16 scored with the 1-6 system yielded an AUC of .86, the EAT-16 scored with the 0-3 system yielded an AUC of .83, the EAT-26 scored with the 1-6 system yielded an AUC of .88, and the EAT-26 scored with the 0-3 system yielded an AUC of .84.

To statistically test whether the measures' AUCs differed, a standardized difference score adjusted for correlation (Hanley & McNeil, 1983) was used. Of all comparisons between the four measures, significant results were obtained for the comparisons of the EAT-26 scored 1-6 versus the EAT-16 scored 1-6 ( $p = .026$ ) and 0-3 ( $p = .005$ ). The EAT-26 scored 1-6 had overall better accuracy, as assessed by AUC, than the EAT-16.

Figure 1

*ROC Curves of EAT-16 and EAT-26*

*Note.* Receiver operating characteristic (ROC) curves are displayed for the EAT-26 and EAT-16, each scored 0-3 and 1-6.

Table 8 summarizes the overall accuracy, specificity, and false positive rate of the measures at declining levels of sensitivity. First, cutoff scores yielding a sensitivity of 100% were tested. Then, decreasing levels of sensitivity were tested to provide a picture of the measures' performance when researchers or clinicians deem that it is acceptable for the EAT-16 to inaccurately classify some cases. Table 8 presents statistics for varying levels of sensitivity: 95.5%, 90.9%, 86.4%, and 81.1%. These sensitivity levels result

from successive misclassification of cases. With 22 cases with complete EAT-16 data in the sample, it can be seen that an EAT-16 cutoff score which misclassifies one case results in a 95.5% sensitivity of the measure, a cutoff score leading to misclassification of two diagnosed individuals results in a 90.9% sensitivity, and so on. Each cutoff score listed in the table represents the lowest score that places an individual in the diagnostic group. Information is not provided for the EAT-26 scored with the 1-6 system at 95.5% sensitivity because no cutoff score yields that sensitivity: a cutoff score of 63 has 100% sensitivity, while a cutoff score of 64 has 90.9% sensitivity.

Table 8

*Statistics for the Measures at Successively Lowered Levels of Sensitivity*

	EAT-16 (1-6)	EAT-16 (0-3)	EAT-26 (1-6)	EAT-26 (0-3)
<u>100% sensitivity</u>				
Cutoff score	41	2	63	4
Overall accuracy	66.2	40.9	68.1	37.4
Specificity	64.5	38.1	66.5	34.4
False positive rate	35.4	61.9	33.5	65.6
<u>95.5% sensitivity</u>				
Cutoff score	42	4	n/a	5
Overall accuracy	68	56.4	n/a	46.3
Specificity	66.7	54.5	n/a	44
False positive rate	33.3	45.5	n/a	56
<u>90.9% sensitivity</u>				
Cutoff score	43	5	65	8
Overall accuracy	69.5	62.4	71.0	62.8
Specificity	68.5	61.1	70.0	61.5
False positive rate	31.5	38.9	30.0	38.5
<u>86.4% sensitivity</u>				
Cutoff score	44	6	68	9
Overall accuracy	72.7	67	75.6	69.1
Specificity	72	66.1	75.1	68.3
False positive rate	28	33.9	24.9	31.7
<u>81.8% sensitivity</u>				
Cutoff score	47	8	69	11
Overall accuracy	76.8	75.2	77.5	74.3
Specificity	76.6	74.8	77.2	74
False positive rate	23.4	25.2	22.8	26

*Note.* The recommended cutoff score, overall accuracy, specificity, and false positive rate are depicted for all the tests at each level of sensitivity.

McNemar <sup>2</sup> tests showed that the EAT-16 and EAT-26 did not differ significantly in accuracy when scored under the same system (either both scored 0-3 or both scored 1-6), with one exception: under 0-3 scoring, the EAT-16 was more accurate at 95.5% sensitivity only. McNemar <sup>2</sup> test results also showed that 1-6 scoring provided more accuracy than 0-3 scoring. Significant values of <sup>2</sup> were obtained when 0-3 scoring was compared with 1-6 scoring, for either of the tests, at all levels of sensitivity except 81.8%.

Table 9

<i>Comparing the Tests' Accuracy at Different Sensitivity Levels</i>				
<u>Sensitivity</u>	<u>EAT-16 (0-3) vs. EAT-16 (1-6)</u>	<u>EAT-16 (0-3) vs. EAT-26-03)</u>	<u>EAT-16 (1-6) vs. EAT-26 (1-6)</u>	<u>EAT-26 (0-3) vs. EAT-26 (1-6)</u>
100%	117.1	n.s.	n.s.	139.3
95.50%	39.8	39.4	-	-
90.90%	17.0	n.s.	n.s.	21.6
86.40%	13.3	n.s.	n.s.	14.8
81.80%	n.s.	n.s.	n.s.	n.s.

*Note.* McNemar <sup>2</sup> values for all significant comparisons of the accuracy of the tests are depicted here. All significant values were significant at  $p < .002$ , the critical value obtained after a Bonferroni adjustment for multiple comparison. No values were obtained for any comparison with the EAT-26 scored 1-6 at 95.5% sensitivity.

## Discussion

### Cultural Group Differences

This study was conducted to investigate the validity of the EAT-16, a potentially useful short screen for eating disorders. The measure was tested on a nonclinical sample of college women. Since acculturation has been associated with disordered eating in some studies (Cachelin, Veisel, Barzegarnazari, & Striegel-Moore, 2000), and not in others (Joiner & Kashubeck, 1996), it was examined in the current study for individuals who reported being Hispanic or half-Hispanic. Based on the OCIS, Hispanic participants

in the current study were somewhat, but not strongly, acculturated to Anglo culture. Half-Hispanic participants were strongly acculturated to Anglo culture and moderately acculturated to Mexican American culture, reflecting bicultural status. Controlling for age and BMI, the Hispanic group had lower mean EAT-16 scores than the Caucasian group, though the half-Hispanic individuals did not significantly differ from these two groups.

The factor structure of the EAT-16 was replicated in the overall sample. Subsequent analyses demonstrated that it was not replicable in the half-Hispanic group, but was replicable in the Caucasian and Hispanic groups. In the measurement invariance analysis, metric invariance was supported for the EAT-16 factor structure in the Caucasian and Hispanic groups, meaning that the four-factor structure of the EAT-16 is acceptable among nonclinical Caucasian and nonclinical Hispanic samples. As the next level of invariance, scalar, was not supported, mean comparisons between these groups cannot be assumed to be meaningful. This finding of partial invariance was in line with expectations, as the factor structure was previously replicated in multiple samples (Belon et al., 2011; Ocker et al., 2007) and found to be invariant across Caucasian and Hispanic groups (Belon et al., 2011).

The finding that the factor structure could not be replicated in the half-Hispanic group requires further investigation with a larger sample. The novel four-factor model found for the half-Hispanic group had an adequate fit but its factors appeared to have limited meaning. None of the original EAT-16 factors was replicated, though the new third factor contained all of the Awareness of Food Contents items plus two Dieting items. All other factors from the original EAT-16 factor structure were split among the new factors. It was unclear what constructs the new factors were tapping, suggesting that



disordered eating behaviors in half-Hispanic college women have a different quality than in either Hispanic or Caucasian college women. Variability in Anglo orientation among individuals making up the small (N=50) half-Hispanic sample could have led to variability in patterns of responding to EAT-16 items, thus leading to a factor structure that is not easily interpretable. Further research could illuminate whether this result is due to problems such as small sample size or heterogeneity of the half-Hispanic group.

### **Total and Scale Score Correlations**

Convergent validity of the EAT-16 was supported, with the total score significantly and positively correlated with other measures of similar constructs (EDE-Q, EDI-2 total and clinical scale scores). Therefore, as expected, the EAT-16 scores can be presumed to assess disordered eating and associated maladaptive beliefs in nonclinical samples. This is in keeping with research which found that the EAT-26 total score was correlated with other ED measures (Berland et al., 1986; Gross et al., 1986; Raciti & Norcross, 1987).

Furthermore, as the previously discovered four-factor structure of the EAT-16 was replicated in the group of Caucasian and Hispanic individuals, correlations were run in this group between each of the four scale scores and the fruit/vegetable and fat scales of the Block Rapid Food Screener. Nearly all hypotheses were supported. Scores on the EAT-16 Dieting and Awareness of Food Contents scales were positively associated with careful, healthy eating (fruit/vegetable scale), and scores on the EAT-16 Self-perception of Body Shape, Dieting, and Awareness of Food Contents scales were negatively associated with less healthy eating (fat scale). It was hypothesized that the Food Preoccupation scale would not be associated with either the fruit/vegetable or fat scale,

but this hypothesis was confirmed only with 1-6 scoring. With 0-3 scoring, the Food Preoccupation scale was significantly positively correlated with the fruit/vegetable scale and significantly negatively correlated with the fat scale. Overall, these results support the ability of the EAT-16 to assess disordered eating thoughts and behaviors.

Furthermore, these results provide evidence that the EAT-16 assesses something related to but distinct from dietary quality in Hispanic and Caucasian individuals.

### **EAT-16 Accuracy Compared to EAT-26 Accuracy**

As predicted, the overall accuracy of the EAT-16 in the present sample at 100% sensitivity (66.2%) was lower than the accuracy reported by Garner and Garfinkel (1982) for the EAT-26 (83.6%) in their validation sample (in which they obtained 100% sensitivity with a cutoff score of 20). The EAT-16's lower accuracy in the present *nonclinical* sample was acceptable given that Garner and Garfinkel's validation sample consisted of a group with eating disorders and a group of controls. Detection of cases is always less accurate in samples with lower prevalence rates (Streiner, 2003).

The EAT-16 and EAT-26 next were compared in terms of sensitivity, specificity, and accuracy at descending levels of sensitivity, from 100% to 81.8%. As with accuracy, sensitivity is impacted by the prevalence of a condition in a sample, as it is a ratio of correctly diagnosed cases to all cases (Williams et al., 1982; Youngstrom, 2013). The McNemar <sup>2</sup> test was used to test for significant differences in the accuracy of the measures. This nonparametric test assesses correlated proportions, such as repeated measures within individuals (Adedokun & Burgess, 2012), but its use for simultaneous assessment within individuals has been questioned as it is not robust to non-independence of samples (Durkalski, Palesch, Lipsitz, & Rust, 2003; Eliasziw & Donner, 1991).

Across levels of sensitivity, the accuracy of the EAT-16 was comparable to the accuracy of the EAT-26. However, when the measures of AUCs were compared, the EAT-26 scored 1-6 was significantly more broadly accurate than the EAT-16 scored with either system. AUCs are an appropriate metric by which to compare overall diagnostic ability of multiple tests (McFall & Treat, 1999; Streiner, 2003). Comparisons within each measure also showed that the 1-6 scoring method produced higher accuracy than the 0-3 scoring. Although the EAT-16 did not attain the level of accuracy found in the initial study of the EAT-26 (Garner et al., 1982), its performance was generally comparable to the performance of the EAT-26 in the present sample. The 1-6 scoring may be preferable as it allows for a broader range of scores, thus theoretically capturing more variability of eating behaviors.

In summary, these results support the validity of the EAT-16, as its ability to detect cases is similar to that of the well-established EAT-26. The EAT-26 frequently has been used to discriminate individuals with and without EDs (Anderson et al., 2009; Garner & Garfinkel, 1979; Garner et al., 1982; Kashubeck-West et al., 2001; Mann et al., 1983; Williamson et al., 1995). Though the EAT-16 did not demonstrate greater accuracy than the EAT-26, this minor issue may be outweighed by the benefit that the EAT-16 is 10 items shorter.

### **EAT-16 Cutoff Score**

Another aim of the present study was to select a cutoff score for the EAT-16 that would differentiate between individuals with and without ED diagnoses. Some researchers employ a strategy of choosing the cutoff score that maximizes the sum of sensitivity and specificity (Smits, Smit, Cuijpers, & de Graaf, 2008). For the current

study, this EAT-16 sum is maximized at 100% sensitivity. In addition, a sensitivity of 100% can be an appropriate goal when a measure is intended as a screening instrument, regardless of the resulting specificity (Youngstrom, 2013). In other words, when screening measures are used, a false diagnosis is perceived as less costly than missing a diagnosis for a true case. For the 1-6 scoring of the EAT-16, a cutoff score of 41 for the EAT-16 had this level of sensitivity in the present sample. This cutoff score yielded a false positive rate of 35.4%, which corresponds to a specificity of 64.6%. For the 0-3 scoring of the EAT-16, a cutoff score of 2 is recommended for 100% sensitivity. Yet this results in a false positive rate of 61.9%, indicating that nearly two-thirds of individuals scoring above the cutoff will not have EDs.

Others have argued that the selection of the optimal cutoff score for any measure is a more subjective decision, based on relative costs and benefits of correct and incorrect decision-making, and taking into account baseline probabilities as well as how the test is meant to be used (McFall & Treat, 1999; Pinteá & Moldovan, 2009; Swets, Dawes, & Monahan, 2000). McFall and Treat (1999) write that "there is no true and unique optimal cutoff value. Because the usefulness of a diagnostic test in a practical setting is a function of the hit rate [correctly diagnosed cases], false alarm rate [false positives], and prevalence of the phenomenon, researchers must consider all three factors when choosing a cutoff" (p. 233).

The eating disorder literature supports the idea that screening measures with less than 100% sensitivity may be acceptable. Researchers testing two other ED instruments as screening measures, the EDE-Q and the SCOFF (Morgan, Reid, & Lacey, 1999), accepted sensitivities of 80% and 72%, respectively, which were associated with false

positive rates of 20% and 27%, respectively (Mond et al., 2008). These researchers selected a cutoff score such that most cases were captured, but false positive rates were maintained at a level the researchers found manageable (Mond et al., 2008). To provide a similar picture of the EAT-16, multiple levels of sensitivity were examined in the present study.

Relative costs and benefits vary in clinical and research settings (Smits et al., 2008). Although the EAT-16 is not costly in terms of time or finances, as a screening measure it requires follow-up assessment to confirm diagnoses (Streiner, 2003). Researchers screening for low prevalence disorders such as EDs are likely to value sensitivity, as it is desirable to reach as many cases as possible. Furthermore, time for follow-up interviews is often allotted as part of the study, and it is generally straightforward to determine in a follow-up interview if a participant is not a case (Smits et al., 2008). Clinicians, by contrast, incur more costs, monetary and otherwise, by conducting follow-up interviews. They are likely to be more accepting of lowered sensitivity in exchange for fewer false positives (Smits et al., 2008). It has been emphasized, however, that providers such as primary care doctors are in need of sensitive screening instruments because they have the ability to diagnose EDs which patients might otherwise minimize or hide (Mond et al., 2008). Ultimately, the optimal cutoff score for the EAT-16 will differ according to setting and desired use of the measure.

### **EAT-26 Validity Results**

The current study's results caution against the use of the 0-3 scoring system of the EAT-26 in nonclinical samples. The traditional cutoff score of 20 resulted in a sensitivity of 50% and a false positive rate of 10%. In other words, although only 10% of individuals

without diagnoses were labeled as having diagnoses, merely half of the individuals with diagnoses scored above the clinical cutoff. Importantly, the low score of 4 in the eating disordered group was not an outlier, as 18.2% of the diagnosed individuals scored below 10. Thus, a cutoff score of 4 would be recommended for the EAT-26 in order to obtain 100% sensitivity. The overall accuracy associated with this cutoff score (37.4%) is lower than the accuracy achieved by the EAT-26 scored 1-6, and the EAT-16. Other researchers screening a broad clinical sample have found that the EAT-26 cutoff score of 20 is not adequately sensitive to detect EDs as well (Orbitello et al., 2006)

### **Strengths and Limitations**

The study's main strength is its contribution to screening in *nonclinical* college samples. It is important to note that the base rate of any eating disorder is approximately 2-6% in women, and the rate of diagnosis in the present sample was 4.7%. Thus, this sample appears comparable to the general female population in terms of prevalence, and consequently validity results obtained here are likely generalizable.

Though the sample size in the present study was satisfactory, a larger sample size would have allowed for further examination of patterns in the data. First, the small number of cases limited the testing of the measure's accuracy, due to the restricted range of possible levels of sensitivity that could be examined. A larger sample with the same overall prevalence rate would have allowed for more precision. Second, the small sample size did not allow for a detailed analysis of the factor structure in the half-Hispanic group. Given the surprising finding that the original four-factor model was not adequate in the half-Hispanic group, it would have been informative to divide the half-Hispanic group in

two in order to first perform an EFA in one subset of the group, and then to attempt a replication of the new factor structure in the second subset of the group.

### **Conclusion**

The results of this study suggest that the EAT-16 is a valid screening measure in nonclinical samples. The EAT-16 total score is meaningful in distinguishing individuals who have diagnoses of any eating disorder from individuals who do not. Its four-factor structure was replicable only in the group containing Caucasian and Hispanic individuals, while the four-factor model that received support in the half-Hispanic group requires additional research. In terms of accuracy, the EAT-16 appears to perform comparably to the EAT-26, and it is recommended that the 1-6 scoring system be used rather than the 0-3 scoring system. Importantly, the EAT-16 has the benefit of being brief, which is essential as far as reducing burden on clients and research participants (Anderson et al., 2004).

## Appendix A. Consent Form

University of New Mexico  
Consent Form

Project Title: Women's Body Images  
 Project Supervisors: Jane Ellen Smith, Ph.D. (277-2650)  
 University of New Mexico, Psychology Department, Albuquerque  
 Project Coordinators: Katherine Belon (277-7514) [kbelon@unm.edu](mailto:kbelon@unm.edu)  
 Liz McLaughlin (277-7514) [emcl@unm.edu](mailto:emcl@unm.edu)

Your signature on this form acknowledges that the following points have been explained to you, and that you understand them. If you have any questions, please have them answered before you sign the form. In signing the form you are not in any way committing yourself to completing the project, and you may discontinue at any time without being penalized. All information will be kept strictly confidential and your name will not appear on any of the questionnaires.

I agree that this project has been explained to me and that I understand the following points:

1. I will be participating in a research project conducted through the Psychology Department at the University of New Mexico. The study will ask about my body image, eating and exercise habits, and ethnicity.
2. I will be completing 9 questionnaires and one interview. It will take about 1 ½ hours altogether. I will receive 2 experimental credits for completing the questionnaires and the interview.
3. I understand that the interview about my eating habits will be audiotaped. This is to allow a second experimenter to later listen to the tape to see if she reaches the same conclusion about my eating patterns.
4. I also understand that I will be asked my height and weight. If I do not know my weight, I will be asked to weigh myself (in private) on a scale provided by the researchers.
5. I am not required to participate in this study, but I am doing so voluntarily. I understand that I may choose to discontinue the study at any time without any penalty.
6. My name will never be found on any of the questionnaires that I fill out, nor will it be on the audiotaped interview.
7. I will not receive individual feedback on my responses, but I will receive information about the topic and study in general.
8. I understand that I am not waiving any of my legal rights by signing this form.
9. There are no known physical risks for participation beyond those of normal daily activities. Potential psychological risks include becoming upset upon reading and thinking about the questions. I understand that I will be given referral information for counselors as part of the debriefing.
10. I may contact Dr. Jane Ellen Smith (505-277-2650; [janelle@unm.edu](mailto:janelle@unm.edu)) if I have any questions regarding this topic in the future. I may also contact her at: Psychology Department, University of New Mexico, MSC03 2220, Albuquerque, NM 87131. I may also contact the University of New Mexico Main Campus Institutional Review Board: 1717 Roma NE, Room 205, Albuquerque, NM 87131; (505) 277-0067.

### CONSENT

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name of Participant

\_\_\_\_\_  
Signature of Researcher

\_\_\_\_\_  
Date



## Appendix B. Demographics

1. What is your age? \_\_\_\_\_
2. What is your marital status? (*Please circle one*)
  - a. Married & living with husband
  - b. Married but not living with husband
  - c. Never married
  - d. Divorced
  - e. Separated
  - f. Widowed
3. How would you describe your ethnic identity?  
\_\_\_\_\_
 

If you are Native American, to what tribe do you belong?

 \_\_\_\_\_
4. What is your occupation?  
\_\_\_\_\_
 

(If you are a full-time or part-time student, please indicate this in addition to mentioning employment)
5. What is your highest level of education? (*Please circle one*)
  - a. Completed junior year in high school (11<sup>th</sup> grade)
  - b. Graduated from high school (12<sup>th</sup> grade) or GED
  - c. Completed at least 1 year of college (but did not receive a degree)
  - d. Completed an associate's degree or equivalent (2 years of college)
  - e. Completed 3 years of college
  - f. Completed a bachelor's degree (4 year college)
  - g. Completed some graduate school (but did not receive a degree)
6. If you have a husband or a Significant Other, what is that person's occupation?  
\_\_\_\_\_
7. If you have a husband or a Significant Other, how long have you been with this person?  
\_\_\_\_\_ years and/or \_\_\_\_\_ months
8. If you have a husband/Significant Other, what is their highest level of education (*circle one*):
  - a. Completed less than junior high school (*less than 7<sup>th</sup> grade*)
  - b. Completed 7<sup>th</sup> grade
  - c. Completed junior high school (8<sup>th</sup> grade)
  - d. Completed freshman year (9<sup>th</sup> grade)
  - e. Completed sophomore year (10<sup>th</sup> grade)
  - f. Completed junior year (11<sup>th</sup> grade)
  - g. Graduated from high school (12<sup>th</sup> grade) or GED
  - h. Completed at least 1 year of college (but did not receive a degree)
- h. Completed a masters degree
- i. Other (please specify)  
\_\_\_\_\_

- i. Completed an associate's degree or equivalent (2 years of college)
- j. Completed a bachelor's degree (4 year college)
- k. Completed some graduate school (but did not receive a degree)
- l. Completed a masters degree
- m. Other (please specify)

\_\_\_\_\_

—

9. How tall are you? \_\_\_\_\_

10. Approximately how much do you weigh? \_\_\_\_\_ (If you do not know, we have a scale you can use in private)

11. Have you ever been diagnosed with an eating disorder? (*circle*) Yes No

12. Have you ever received treatment for an eating disorder? (*circle*) Yes No

If YES: please indicate the type of eating disorder:

\_\_\_\_\_,  
as well as when \_\_\_\_\_  
and where you were treated

\_\_\_\_\_

13. Do you think you are overweight? (*circle*)

Yes No

If YES: how many pounds do you think you should lose? \_\_\_\_\_

14. Do you think you are underweight? (*circle*)

Yes No

If YES: how many pounds do you think you should gain? \_\_\_\_\_

### Appendix C. Orthogonal Cultural Identification Scale

Please answer the following questions which ask how close you are to different cultures. Please complete A ó D for each question, and complete E as appropriate.

Some families have special activities or traditions that take place every year at particular times (such as holiday parties, special meals, religious activities, trips, or visits). How many of these special activities or traditions did your family have when you were growing up that were based oní				
	A lot	Some	A few	None at all
A. White-American or Anglo culture				
B. Mexican-American or Spanish culture				
C. American-Indian culture				
D. Black-American culture				
E. Other culture. Please specify: _____				
In your own family, do you do special things together or have special traditions that are based oní				
	A lot	Some	A few	None at all
A. Mexican-American or Spanish culture				
B. American-Indian culture				
C. Black-American culture				
D. White-American or Anglo culture				
E. Other culture. Please specify: _____				
Does your family live by or followí				
	A lot	Some	A few	None at all
A. The American-Indian way of life				
B. The Black-American way of life				
C. The White-American or Anglo way of life				
D. The Mexican-American or Spanish way of life				
E. The _____ way of life. (Please specify)				
Do <u>you</u> live or followí				
	A lot	Some	A few	None at all
A. The Black-American way of life				
B. The White-American or Anglo way of life				
C. The Mexican-American or Spanish way of life				
D. The American-Indian way of life				

E. The _____ way of life. (Please specify)				
---	--	--	--	--

Is your family a successí	A lot	Some	A few	None at all
A. In the Black-American way of life				
B. In the Mexican-American or Spanish way of life				
C. In the White-American or Anglo way of life				
D. In the American-Indian way of life				
E. In the _____ way of life. (Please specify)				
Are <u>you</u> a successí	A lot	Some	A few	None at all
A. In the American-Indian way of life				
B. In the White-American or Anglo way of life				
C. In the Black-American way of life				
D. In the Mexican-American or Spanish way of life				
E. Other culture. Please specify: _____				

## Appendix D. EAT-26

## INSTRUCTIONS

Please place an (X) under the column which applies best to each of the numbered statements. All of the results will be strictly confidential. Most of the questions directly relate to food or eating, although other types of questions have been included. Please answer each question carefully. Thank you.

ALWAYS	USUALLY	OFTEN	SOMETIMES	RARELY	NEVER		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.	Am terrified about being overweight.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.	Avoid eating when I am hungry.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.	Find myself preoccupied with food.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.	Have gone on eating binges where I feel that I may not be able to stop.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.	Cut my food into small pieces.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.	Aware of the calorie content of foods that I eat.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.	Particularly avoid foods with a high carbohydrate content.(e.g. bread, rice, potatoes, etc.).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.	Feel that others would prefer if I ate more.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	Vomit after I have eaten.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	Feel extremely guilty after eating.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.	Am preoccupied with a desire to be thinner.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12.	Think about burning up calories when I exercise.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13.	Other people think that I am too thin.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14.	Am preoccupied with the thought of having fat on my body.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15.	Take longer than others to eat my meals.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16.	Avoid foods with sugar in them.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17.	Eat diet foods.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	18.	Feel that food controls my life.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	19.	Display self-control around food.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	20.	Feel that others pressure me to eat.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	21.	Give too much time and thought to food.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	22.	Feel uncomfortable after eating sweets.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	23.	Engage in dieting behaviour.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	24.	Like my stomach to be empty.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	25.	Enjoy trying new rich foods.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	26.	Have the impulse to vomit after meals.

## Appendix E. EAT-16

## INSTRUCTIONS

Please place an (X) under the column which applies best to each of the numbered statements. All of the results will be strictly confidential. Most of the questions directly relate to food or eating, although other types of questions have been included. Please answer each question carefully. Thank you.

ALWAYS	USUALLY	OFTEN	SOMETIMES	RARELY	NEVER	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. Am terrified about being overweight.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. <del>Avoid eating when I am hungry.</del>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. Find myself preoccupied with food.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4. Have gone on eating binges where I feel that I may not be able to stop.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5. <del>Cut my food into small pieces.</del>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6. Aware of the calorie content of foods that I eat.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7. Particularly avoid foods with a high carbohydrate content.(e.g. bread, rice, potatoes, etc.).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8. <del>Feel that others would prefer if I ate more.</del>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9. <del>Vomit after I have eaten.</del>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10. Feel extremely guilty after eating.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11. Am preoccupied with a desire to be thinner.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12. Think about burning up calories when I exercise.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13. <del>Other people think that I am too thin.</del>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14. Am preoccupied with the thought of having fat on my body.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15. <del>Take longer than others to eat my meals.</del>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16. Avoid foods with sugar in them.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17. Eat diet foods.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	18. Feel that food controls my life.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	19. <del>Display self-control around food.</del>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	20. <del>Feel that others pressure me to eat.</del>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	21. Give too much time and thought to food.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	22. Feel uncomfortable after eating sweets.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	23. Engage in dieting behaviour.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	24. Like my stomach to be empty.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	25. <del>Enjoy trying new rich foods.</del>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	26. <del>Have the impulse to vomit after meals.</del>

**Appendix F. Ten Items Removed from EAT-26 when EAT-16 was Formed**

- Avoid eating when I am hungry.
- Cut my food into small pieces.
- Feel that others would prefer if I ate more.
- Vomit after I have eaten.
- Other people think that I am too thin.
- Take longer than others to eat my meals.
- Display self-control around food.
- Feel that others pressure me to eat.
- Enjoy trying new rich foods.
- Have the impulse to vomit after meals.

## Appendix G. Eating Disorders Inventory

First, write your **Subject #** on your EDI-2 Answer Sheet. Your ratings on the items below will be made on the EDI-2 Answer Sheet. The items ask about your attitudes, feelings, and behavior. Some of the items relate to food or eating. Other items ask about your feelings about yourself.

For each item, decide if the item is true about you **ALWAYS (A)**, **USUALLY (U)**, **OFTEN (O)**, **SOMETIMES (S)**, **RARELY (R)**, or **NEVER (N)**. Circle the letter that corresponds to your rating on the EDI-2 Answer Sheet. For example, if your rating for an item is **OFTEN**, you would circle the **O** for that item on the Answer Sheet.

Respond to all of the items, making sure that you circle the letter for the rating that is true about you. **DO NOT ERASE!** If you need to change an answer, make an "X" through the incorrect letter and then circle the correct one.

- 
1. I eat sweets and carbohydrates without feeling nervous.
  2. I think that my stomach is too big.
  3. I wish that I could return to the security of childhood.
  4. I eat when I am upset.
  5. I stuff myself with food.
  6. I wish that I could be younger.
  7. I think about dieting.
  8. I get frightened when my feelings are too strong.
  9. I think that my thighs are too large.
  10. I feel ineffective as a person.
  11. I feel extremely guilty after overeating.
  12. I think that my stomach is just the right size.
  13. Only outstanding performance is good enough in my family.
  14. The happiest time in life is when you are a child.
  15. I am open about my feelings.
  16. I am terrified of gaining weight.
  17. I trust others.
  18. I feel alone in the world.
  19. I feel satisfied with the shape of my body.
  20. I feel generally in control of things in my life.
  21. I get confused about what emotion I am feeling.
  22. I would rather be an adult than a child.
  23. I can communicate with others easily.
  24. I wish I were someone else.
  25. I exaggerate or magnify the importance of weight.
  26. I can clearly identify what emotion I am feeling.
  27. I feel inadequate.
  28. I have gone on eating binges where I felt that I could not stop.
  29. As a child, I tried very hard to avoid disappointing my parents and teachers.
  30. I have close relationships.
  31. I like the shape of my buttocks.
  32. I am preoccupied with the desire to be thinner.
  33. I don't know what's going on inside me.
  34. I have trouble expressing my emotions to others.
  35. The demands of adulthood are too great.
  36. I hate being less than best at things.
  37. I feel secure about myself.



38. I think about bingeing (overeating).
39. I feel happy that I am not a child anymore.
40. I get confused as to whether or not I am hungry.
41. I have a low opinion of myself.
42. I feel that I can achieve my standards.
43. My parents have expected excellence of me.
44. I worry that my feelings will get out of control.
45. I think my hips are too big.
46. I eat moderately in front of others and stuff myself when they're gone.
47. I feel bloated after eating a normal meal.
48. I feel that people are happiest when they are children.
49. If I gain a pound, I worry that I will keep gaining.
50. I feel that I am a worthwhile person.
51. When I am upset, I don't know if I am sad, frightened, or angry.
52. I feel that I must do things perfectly or not do them at all.
53. I have the thought of trying to vomit in order to lose weight.
54. I need to keep people at a certain distance (feel uncomfortable if someone tries to get too close).
55. I think that my thighs are just the right size.
56. I feel empty inside (emotionally).
57. I can talk about personal thoughts or feelings.
58. The best years of your life are when you become an adult.
59. I think my buttocks are too large.
60. I have feelings I can't quite identify.
61. I eat or drink in secrecy.
62. I think that my hips are just the right size.
63. I have extremely high goals.
64. When I am upset, I worry that I will start eating.
65. People I really like end up disappointing me.
66. I am ashamed of my human weaknesses.
67. Other people would say that I am emotionally unstable.
68. I would like to be in total control of my bodily urges.
69. I feel relaxed in most group situations.
70. I say things impulsively that I regret having said.
71. I go out of my way to experience pleasure.
72. I have to be careful of my tendency to abuse drugs.
73. I am outgoing with most people.
74. I feel trapped in relationships.
75. Self-denial makes me feel stronger spiritually.
76. People understand my real problems.
77. I can't get strange thoughts out of my head.
78. Eating for pleasure is a sign of moral weakness.
79. I am prone to outbursts of anger or rage.
80. I feel that people give me the credit I deserve.
81. I have to be careful of my tendency to abuse alcohol.
82. I believe that relaxing is simply a waste of time.
83. Others would say that I get irritated easily.
84. I feel like I am losing out everywhere.

85. I experience marked mood shifts.
86. I am embarrassed by my bodily urges.
87. I would rather spend time by myself than with others.
88. Suffering makes you a better person.
89. I know that people love me.
90. I feel like I must hurt myself or others.
91. I feel that I really know who I am.

Subject # \_\_\_\_\_

## Appendix H. EDE-Q

**Instructions:** The following questions are concerned with the past four weeks (28 days) only. Please read each question carefully. Please answer all the questions. Thank you.

**Questions 1 to 12:** Please circle the appropriate number on the right. Remember that the questions only refer to the past four weeks (28 days) only.

On how many of the past 28 days .....	No days	1-5 days	6-12 days	13-15 days	16-22 days	23-27 days	Every day
1 Have you been deliberately <u>trying</u> to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
2 Have you gone for long periods of time (8 waking hours or more) without eating anything at all in order to influence your shape or weight?	0	1	2	3	4	5	6
3 Have you <u>tried</u> to exclude from your diet any foods that you like in order to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
4 Have you <u>tried</u> to follow definite rules regarding your eating (for example, a calorie limit) in order to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
5 Have you had a definite desire to have an <u>empty</u> stomach with the aim of influencing your shape or weight?	0	1	2	3	4	5	6
6 Have you had a definite desire to have a <u>totally flat</u> stomach?	0	1	2	3	4	5	6
7 Has thinking about <u>food, eating or calories</u> made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?	0	1	2	3	4	5	6
8 Has thinking about <u>shape or weight</u> made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?	0	1	2	3	4	5	6
9 Have you had a definite fear of losing control over eating?	0	1	2	3	4	5	6
10 Have you had a definite fear that you might gain weight?	0	1	2	3	4	5	6
11 Have you felt fat?	0	1	2	3	4	5	6
12 Have you had a strong desire to lose weight?	0	1	2	3	4	5	6

**Questions 13-18: Please fill in the appropriate number in the boxes on the right. Remember that the questions only refer to the past four weeks (28 days).**

**Over the past four weeks (28 days) .....**

13 Over the past 28 days, how many <u>times</u> have you eaten what other people would regard as an <u>unusually large amount of food</u> (given the circumstances)?	.....
14 ..... On how many of these times did you have a sense of having lost control over your eating (at the time that you were eating)?	.....
15 Over the past 28 days, on how many <b>DAYS</b> have such episodes of overeating occurred (i.e., you have eaten an unusually large amount of food <u>and</u> have had a sense of loss of control at the time)?	.....
16 Over the past 28 days, how many <u>times</u> have you made yourself sick (vomit) as a means of controlling your shape or weight?	.....
17 Over the past 28 days, how many <u>times</u> have you taken laxatives as a means of controlling your shape or weight?	.....
18 Over the past 28 days, how many <u>times</u> have you exercised in a "driven" or "compulsive" way as a means of controlling your weight, shape or amount of fat, or to burn off calories?	.....

**Questions 19 to 21: Please circle the appropriate number. Please note that for these questions the term "binge eating" means eating what others would regard as an unusually large amount of food for the circumstances, accompanied by a sense of having lost control over eating.**

19 Over the past 28 days, on how many days have you eaten in secret (ie, furtively)? ..... Do not count episodes of binge eating	No days	1-5 days	6-12 days	13-15 days	16-22 days	23-27 days	Every day
	0	1	2	3	4	5	6
20 On what proportion of the times that you have eaten have you felt guilty (felt that you've done wrong) because of its effect on your shape or weight? ..... Do not count episodes of binge eating	None of the times	A few of the times	Less than half	Half of the times	More than half	Most of the time	Every time
	0	1	2	3	4	5	6
21 Over the past 28 days, how concerned have you been about other people seeing you eat? ..... Do not count episodes of binge eating	Not at all	Slightly		Moderately		Markedly	
	0	1	2	3	4	5	6

Questions 22 to 28: Please circle the appropriate number on the right. Remember that the questions only refer to the past four weeks (28 days).

Over the past 28 days .....	Not at all		Slightly		Moderate-ly		Markedly
22 Has your <u>weight</u> influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6
23 Has your <u>shape</u> influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6
24 How much would it have upset you if you had been asked to weigh yourself once a week (no more, or less, often) for the next four weeks?	0	1	2	3	4	5	6
25 How dissatisfied have you been with your <u>weight</u> ?	0	1	2	3	4	5	6
26 How dissatisfied have you been with your <u>shape</u> ?	0	1	2	3	4	5	6
27 How uncomfortable have you felt seeing your body (for example, seeing your shape in the mirror, in a shop window reflection, while undressing or taking a bath or shower)?	0	1	2	3	4	5	6
28 How uncomfortable have you felt about <u>others</u> seeing your shape or figure (for example, in communal changing rooms, when swimming, or wearing tight clothes)?	0	1	2	3	4	5	6

What is your weight at present? (Please give your best estimate.) .....

What is your height? (Please give your best estimate.) .....

If female: Over the past three-to-four months have you missed any menstrual periods? .....

If so, how many? .....

Have you been taking the "pill"? .....

**THANK YOU**



## Appendix J. Structured Clinical Interview for DSM-IV

SCID Version 2.0 (for DSM-IV) Anorexia Nervosa (FEB 1996 FINAL) Eating Disorders I

### H. EATING DISORDERS

#### \*ANOREXIA NERVOSA\*

#### ANOREXIA NERVOSA CRITERIA

SCREEN Q#11
YES    NO

-> IF SCREENING QUESTION #11 ANSWERED "NO," SKIP TO \*BULIMIA NERVOSA,\* H. 4

-> IF QUESTION #11 ANSWERED "YES":  
You've said that there was a time when you weighed much less than other people thought you ought to weigh...

-> IF SCREENER NOT USED: Now I would like to ask you some questions about your eating habits and your weight. Have you ever had a time when you weighed much less than other people thought you ought to weigh?

IF YES: Why was that? How much did you weigh? How old were you then? How tall were you?

A. Refusal to maintain body weight at or above a minimally normal weight for age and height (e.g., weight loss leading to maintenance of body weight less than 85% of that expected; or failure to make expected weight gain during period of growth, leading to body weight less than 85% of that expected)

? 1 2 3 H1

GO TO *BU- LIMIA NER- VOSA,* H. 4
--

At that time, were you very afraid that you could become fat?

B. Intense fear of gaining weight or becoming fat, even though underweight.

? 1 2 3 H2

GO TO *BU- LIMIA NER- VOSA,* H. 4
--

At your lowest weight, did you still feel too fat or that part of your body was too fat?

C. Disturbance in the way in which one's body weight or shape is experienced; undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight

? 1 2 3 H3

IF NO: Did you need to be very thin in order to feel good about yourself?

IF NO AND LOW WEIGHT IS MEDICALLY SERIOUS: When you were that thin, did anybody tell you it could be dangerous to your health to be that thin? (What did you think?)

GO TO *BU- LIMIA NER- VOSA,* H. 4
--

?=inadequate information    1=absent or false    2=subthreshold    3=threshold or true

FOR FEMALES: Before this time, were you having your periods? Did they stop? (For how long?)

D. In postmenarchal females, amenorrhea, i.e., the absence of at least three consecutive menstrual cycles. (A woman is still considered to have amenorrhea if her periods occur only following hormone, e.g., estrogen, administration)

? 1 2 3

GO TO \*BU-LIMIA NER-VOSA,\* H. 4

M4

ANOREXIA NERVOSA CRITERIA A, B, C, AND D ARE CODED "3"

1 3

GO TO \*BU-LIMIA NER-VOSA,\* H. 4

AN-OREX-IA NER-VOSA

M5

(Do you have eating binges in which you eat a lot of food in a short period of time and feel that your eating is out of control? (How often?)

SUBTYPE CURRENT EPISODE: During the current episode of Anorexia Nervosa, the person has regularly engaged in binge-eating or purging behavior (i.e., self-induced vomiting or misuse of laxatives, diuretics, or enemas)

1 3

RESTRICT-ING TYPE

BINGE-EATING /PURG-ING TYPE

IF NO: What kinds of things have you done to keep weight off? (Ever made yourself vomit or take laxatives, enemas, or water pills?) (How often?)

?=inadequate information 1=absent or false 2=subthreshold 3=threshold or true



**\*ANOREXIA NERVOSA CHRONOLOGY\***

IF UNCLEAR: During the past month, have you had (SXS OF ANOREXIA NERVOSA)?	Has met symptomatic criteria for Anorexia Nervosa during past month (criteria A, B, and C)	?	1	3
--	--	---	---	---

H6

**INDICATE CURRENT SEVERITY:**

- 1 - Mild: Few, if any, symptoms in excess of those required to make the diagnosis are present, and symptoms result in no more than minor impairments in social or occupational functioning.
- 2 - Moderate: Symptoms or functional impairment between "mild" and "severe" are present.
- 3 - Severe: Many symptoms in excess of those required to make the diagnosis, or several symptoms that are particularly severe, are present, or the symptoms result in marked impairment in social or occupational functioning.

H7

CONTINUE WITH \*AGE AT ONSET\*, BELOW.

**IF CURRENT CRITERIA NOT FULLY MET (OR NOT AT ALL):**

- 4 - In Partial Remission: The full criteria for the disorder were previously met but currently only some of the symptoms or signs of the disorder remain.
- 5 - In Full Remission: There are no longer any symptoms or signs of the disorder but it is still clinically relevant to note the disorder--for example, in an individual with previous episodes of Anorexia Nervosa who has been symptom free while receiving weekly psychotherapy for past year.
- 6 - Prior History: There is a history of the criteria having been met for the disorder but the individual is considered to have recovered from it.

H8

When did you last have (ANY SXS OF ANOREXIA NERVOSA)?

Number of months prior to interview when last had a symptom of Anorexia Nervosa

H9

**\*AGE AT ONSET\***

IF UNKNOWN: How old were you when you first started having (SXS OF ANOREXIA NERVOSA)?

Age at onset of Anorexia Nervosa (CODE 99 IF UNKNOWN)

H

GO TO *BULIMIA NERVOSA* H. 4
------------------------------

?=inadequate information    1=absent or false    2=subthreshold    3=threshold or true

**\*BULIMIA NERVOSA\***

**BULIMIA NERVOSA CRITERIA**

IF: CRITERIA CURRENTLY MET FOR ANOREXIA NERVOSA, CHECK HERE  AND SKIP TO THE NEXT MODULE.

SCREEN Q#12	
YES	NO

-> IF SCREENING QUESTION #12 IS ANSWERED "NO," SKIP TO NEXT MODULE.

IF NO: GO TO NEXT MODULE

-> IF QUESTION #12 ANSWERED "YES":  
You've said that you've often had times when your eating was out of control. Tell me about those times.

-> IF SCREENER NOT USED: Have you often had times when your eating was out of control? Tell me about those times.

A. Recurrent episodes of binge eating. An episode of binge eating is characterized by BOTH of the following:

(2) a sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating) ? 1 2 3

H11

GO TO NEXT MODULE

IF UNCLEAR: During these times, do you often eat within any two hour period what most people would regard as an unusual amount of food? Tell me about that.

(1) eating, in a discrete period of time (e.g., within any two hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances. ? 1 2 3

H12

GO TO NEXT MODULE

Did you do anything to counteract the effects of eating that much? (Like making yourself vomit, taking laxatives, enemas, or water pills, strict dieting or fasting, or exercising a lot?)

B. Recurrent inappropriate compensatory behavior in order to prevent weight gain, such as: self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or excessive exercise. ? 1 2 3

H13

GO TO \*BINGE EATING DISORDER,\* H. 7

How often were you eating that much (AND COMPENSATORY BEHAVIOR)? (At least twice a week for at least three months?)

C. The binge eating and inappropriate compensatory behaviors both occur, on average, at least twice a week for three months. ? 1 2 3

H14

GO TO \*BINGE EATING DISORDER,\* H. 7

?=inadequate information    1=absent or false    2=subthreshold    3=threshold or true

Were your body shape and weight among the most important things that affected how you felt about yourself?

D. Self-evaluation is unduly influenced by body shape and weight.

? 1 2 3

GO TO NEXT MODULE

E. The disturbance does not occur exclusively during episodes of Anorexia Nervosa

? 1 2 3

GO TO NEXT MODULE

BULIMIA NERVOSA CRITERIA A, B, C, D AND E ARE CODED "3"

1 3

GO TO NEXT MODULE

BULIMIA NERVOSA

SPECIFY TYPE:  
During the current episode of Bulimia Nervosa, the person has regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas

1 3

NON-PURGING TYPE

PURGING TYPE

?=inadequate information    1=absent or false    2=subthreshold    3=threshold or true

**\*BULIMIA NERVOSA CHRONOLOGY\***

IF UNCLEAR: During the past month, have you had (SXS OF BULIMIA NERVOSA)?	Has met symptomatic criteria for Bulimia Nervosa during past month (criteria A, B, C, D, and E)	?	1	3
---	---	---	---	---

**INDICATE CURRENT SEVERITY:**

- 1 - Mild: Few, if any, symptoms in excess of those required to make the diagnosis are present, and symptoms result in no more than minor impairments in social or occupational functioning.
- 2 - Moderate: Symptoms or functional impairment between "mild" and "severe" are present.
- 3 - Severe: Many symptoms in excess of those required to make the diagnosis, or several symptoms that are particularly severe, are present, or the symptoms result in marked impairment in social or occupational functioning.

CONTINUE WITH \*AGE AT ONSET\*, BELOW.

**IF CURRENT CRITERIA NOT FULLY MET (OR NOT AT ALL):**

- 4 - In Partial Remission: The full criteria for the disorder were previously met but currently only some of the symptoms or signs of the disorder remain.
- 5 - In Full Remission: There are no longer any symptoms or signs of the disorder but it is still clinically relevant to note the disorder--for example, in an individual with previous episodes of Bulimia Nervosa has been symptom free on a medication for the past three years.
- 6 - Prior History: There is a history of the criteria having been met for the disorder but the individual is considered to have recovered from it.

When did you last have (ANY SXS OF BULIMIA NERVOSA)?	Number of months prior to interview when last had a symptom of Bulimia Nervosa	_____
--	--	-------

**\*AGE AT ONSET\***

IF UNKNOWN: How old were you when you first started having (SXS OF BULIMIA NERVOSA)?	Age at onset of Bulimia Nervosa (CODE 99 IF UNKNOWN)	_____
--	--	-------

**GO TO NEXT MODULE**

?=inadequate information    1=absent or false    2=subthreshold    3=threshold or true

★ Remember a few minutes ago we were talking about eating out of control? We were talking about eating what most people would consider a large amount of food in a short period of time; in 2 hours or less. These are actually called eating binges.

SCID Vers

\*BINGE-EATING DISORDER\*

(see statement above)  
During these binges...

BINGE-EATING DISORDER CRITERIA

B. The binge-eating episodes are associated with three (or more) of the following:

...did you eat much more rapidly than normal?	(1) eating much more rapidly than normal	?	1	2	3	K2
...eat until you felt uncomfortably full?	(2) eating until feeling uncomfortably full	?	1	2	3	K2
...eat large amounts of food when you didn't feel physically hungry?	(3) eating large amounts of food when not feeling physically hungry	?	1	2	3	K2
...eat alone because you were embarrassed by how much you were eating?	(4) eating alone because of being embarrassed by how much one is eating	?	1	2	3	K2
...feel disgusted with yourself, depressed, or feel very guilty after overeating?	(5) feeling disgusted with oneself, depressed, or very guilty after overeating	?	1	2	3	K2
	AT LEAST 3 "B" SXS CODED "3"		1		3	K2

GO TO  
NEXT  
MODULE

Was it very upsetting to you that you couldn't stop eating or control what or how much you were eating?	C. Marked distress regarding binge eating is present	?	1	2	3	K2
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GO TO  
NEXT  
MODULE

IF UNKNOWN: How often did you binge? (For how long?) (At least two days a week for at least six months?)	D. The binge eating occurs, on average, at least 2 days a week for 6 months.	?	1	2	3	K2
--	--	---	---	---	---	----

GO TO  
NEXT  
MODULE

?=inadequate information    1=absent or false    2=subthreshold    3=threshold or true

SCID Version 2.0 (for DSM-IV) Binge Eating (FEB 1996 FINAL) Eating Disorders H. 8

E. The binge eating is not associated with the regular use of inappropriate compensatory behaviors (e.g., purging, fasting, excessive exercise) and does not occur exclusively during the course of Anorexia Nervosa or Bulimia Nervosa

? 1 2 3 K31

GO TO  
NEXT  
MODULE

BINGE EATING DISORDER CRITERIA A, B, C, D, AND E ARE CODED "3"

1 3 K32

GO TO  
NEXT  
MODULE

BINGE  
EATING  
DISOR-  
DER

?=inadequate information 1=absent or false 2=subthreshold 3=threshold or true

SCID Version 2.0 (for DSM-IV) Binge Eating (FEB 1996 FINAL) Eating Disorders H.

**\*BINGE EATING DISORDER CHRONOLOGY\***

IF UNCLEAR: During the past month, have you had (SXS OF BINGE EATING DISORDER)?	Has met symptomatic criteria for Binge Eating Disorder during past month (criteria A, B, C, D, and E)	?	1	3
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**INDICATE CURRENT SEVERITY:**

- 1 - Mild: Few, if any, symptoms in excess of those required to make the diagnosis are present, and symptoms result in no more than minor impairments in social or occupational functioning.
- 2 - Moderate: Symptoms or functional impairment between "mild" and "severe" are present.
- 3 - Severe: Many symptoms in excess of those required to make the diagnosis, or several symptoms that are particularly severe, are present, or the symptoms result in marked impairment in social or occupational functioning.

CONTINUE WITH \*AGE AT ONSET\*, BELOW.

**IF CURRENT CRITERIA NOT FULLY MET (OR NOT AT ALL):**

- 4 - In Partial Remission: The full criteria for the disorder were previously met but currently only some of the symptoms or signs of the disorder remain.
- 5 - In Full Remission: There are no longer any symptoms or signs of the disorder but it is still clinically relevant to note the disorder--for example, in an individual with previous episodes of Binge Eating Disorder has been symptom free on a medication for the past three years..
- 6 - Prior History: There is a history of the criteria having been met for the disorder but the individual is considered to have recovered from it.

When did you last have (ANY SXS OF BINGE EATING DISORDER)?	Number of months prior to interview when last had a symptom of Binge Eating Disorder	_____
--	--	-------

**\*AGE AT ONSET\***

IF UNKNOWN: How old were you when you first started having (SXS OF BINGE EATING DISORDER)?	Age at onset of Binge Eating Disorder (CODE 99 IF UNKNOWN)	_____
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GO TO NEXT MODULE

?=inadequate information    ]=absent or false    2=subthreshold    3=threshold or true

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