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Spanish-Language Eating Disorder Examination Interview: Factor Structure in Latino/as

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Abstract

Latino/s face health care disparities in eating/weight disorders but are under-represented in treatment research and this is especially the case for Spanish-speaking-only persons. The development of psychometrically-sound assessment methods for Latino/as is needed to facilitate eating/weight research. The current study aimed to evaluate the factor structure of the Spanish-language version of the Eating Disorder Examination (S-EDE) interview, one of the primary assessment methods in studies of eating/weight despite limited data regarding psychometric aspects of this measure. Participants were 156 Spanish-speaking-only Latino/as (mean BMI 33.2; 84.6% classified as overweight) who were reliably administered the S-EDE interview by trained bi-lingual doctoral research-clinicians. Confirmatory factor analysis revealed an inadequate fit for the original EDE structure but revealed a good fit for an alternative structure suggested by recent research. CFA supported an 8-item 3-factor structure; the three factors were interpreted as Dietary Restraint, Shape/Weight Overvaluation, and Body Dissatisfaction. These factor analytic findings of the Spanish EDE interview are comparable to recent findings reported for English-speaking obese patient groups and have implications for clinical assessment and research with Latino/as.

Keywords

obesity; eating behavior; body image; assessment; Hispanic

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Author Disclosures

• Statement 2: Contributors

Dr. Grilo designed the study and protocol, conducted the study, and wrote the first draft of the manuscript. Dr. Crosby performed the statistical analysis. Dr. White contributed to conducting the study. All authors contributed to and have approved the final manuscript.

• Statement 3: Conflict of Interest

The authors report no conflicts of interest.

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1.1 Introduction

Latino/as in the United States are characterized by health care disparities in obesity, eating behaviors, and obesity-related medical problems (Flegal, Carroll, Ogden, & Curtin, 2010; Perez-Escamilla, 2011). Despite higher rates of obesity (Flegal et al., 2010) and comparable-to-higher rates of binge-eating (Alegria, Woo, Cao, Torres, Meng, & Striegel-Moore, 2007; Marques et al., 2011) than whites, Latino/as are under-represented in treatment research in the eating/weight disorders literatures (Franko et al., 2012). These issues are even greater among the large segment of the Latino/a population in the United States that does not speak English (Perez-Escamilla, 2011). Research on psychometrically-sound assessment methods for Latino/as could contribute to addressing eating-related health disparity issues.

A Spanish-Language version of the Eating Disorder Examination interview (EDE) (Fairburn & Cooper, 1993), a major instrument used broadly in studies of eating/weight disorders (Grilo, Masheb, & Wilson, 2001a, 2001b), was developed by Grilo and colleagues (2005) using rigorous back-forth translation methods. The EDE assesses a variety of overeating behaviors, weight-control methods, and features of eating psychopathology. The EDE comprises four subscales clinically derived for anorexia nervosa and bulimia nervosa (Cooper, Cooper, & Fairburn, 1989) although subsequent research has found that many of these features are present to varying levels across diverse eating/weight problems (Allison, Grilo, Masheb, & Stunkard, 2005). Grilo et al (2005), in their initial study of 60 Latinas, reported good inter-rater and test-retest reliability for binge eating and for the four EDE scales comparable to those reported for groups consisting primarily of English-speaking whites (Grilo et al., 2004; Rizvi, Peterson, Crow, & Agras, 2000).

Despite the widespread and expanded use of the EDE in research studies, there is a dearth of basic psychometric research on this instrument. There are four published reports on the factor structure of the EDE (Mannucci, Ricca, di Bernardo, Moretti, Cabras, & Rotella, 1997; Wade, Byrne, & Bryant-Waugh, 2008; Bryne, Allen, Lampard, Dove, & Fursland, 2010; Grilo, Crosby, et al., 2010) and all failed to replicate the original EDE subscale structure. Mannucci et al (1997) reported that a principal components analysis with varimax rotation with EDE data from 115 adult obese patients revealed a two-factor solution (a restraint factor and a second factor with most variables from the three other subscales). Wade et al (2008) reported that two sets of principal components analyses with non-orthogonal promax rotation on EDE data from young adolescent female twin pairs failed to replicate the original EDE scales and failed to replicate across the twin pairs. The first factor, however, which consisted of 8 items reflecting both weight and shape concerns and accounted for roughly 41% of the overall variance, replicated for both twins. Bryne et al (2010), in the first confirmatory factor analysis (CFA) of the EDE, tested the original EDE model against 3-, 2-, and 1-factor models using data from eating disordered, treatment-seeking obese, and non-eating disordered community-based subjects. CFA revealed inadequate fits for the original EDE and for the three alternative models in all three subgroups, with one exception: a one-factor 8-item solution reflecting weight/shape concerns had an adequate fit within the eating disordered group. Grilo et al. (2010), in a study of patients with binge-eating disorder, reported that CFA revealed an inadequate fit for the original EDE scales. Grilo et al (2010) identified a 7-item 3-factor solution using exploratory factor analysis (EFA; using maximum likelihood extraction and promax nonorthogonal rotation) on a random split-half of the sample and CFA revealed a good fit of this solution in the second random split-half sample. The three factors, interpreted as dietary restraint, shape/weight overvaluation, and body dissatisfaction were quite similar to the structure reported for the self-report version of the EDE in a study with extremely obese bariatric surgery candidates that also employed EFA/CFA methodology (Hrabosby et al., 2008).

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In summary, the four studies published to date of the factor structure of the EDE did not provide empirical support for the clinically-derived original EDE subscale structure and all reported different solutions. One study of the EDE, however, revealed an alternative solution that was "confirmed" in a second random split-half of the sample (Grilo et al., 2008) and was nearly identical to the solution reported by a CFA study of the self-report version (Hrabosky et al., 2008). The present study evaluated the factor structure of the Spanish-Language version of the EDE in a Latino/as using CFA to test the original and alternative (Grilo et al., 2010) factor structures.

2. Method

2.1. Participants

Participants were 156 (141 women and 15 men) monolingual (Spanish-speaking-only) Latino/as who responded to recruitment ads and referrals to participate in research on eating, health, and obesity. IRB approval was obtained and participants provided written informed consent in Spanish. Participants were paid $75 for completing the assessments.

Participants had a mean age of 44.1 years (SD=12.1). Mean body mass index (BMI) was 33.2 (SD=7.0); 132 (84.6%) of the participants were classified as overweight (BMI ≥ 25) and 111 (71.2%) as obese (BMI ≥ 30) based on actual measurements. Most participants were socioeconomically disadvantaged with only 37 (23.7%) having completed more than high school education. Participants were diverse in their country of background representing Puerto Rico and several countries from Central/South America.

2.2 Assessments

Assessments were administered in Spanish by experienced bi-lingual research-clinicians trained in using the *Spanish-Language-EDE* (S-EDE; Grilo et al., 2005). EDE training followed the same procedures used previously by the investigators resulting in good inter-rater and test-retest reliability findings in other studies (Grilo et al., 2004) and was augmented with attention to relevant Latino cultural constructs important for establishing good therapeutic relations (Anez, Paris, Bedgregal, Davidson, & Grilo, 2005).

The S-EDE (Grilo et al., 2005; Fairburn & Cooper, 1993), is a semi-structured investigator-based interview that focuses on the past 28 days. The S-EDE assesses the frequency of different forms of overeating and of inappropriate weight compensatory methods and comprises four subscale scores (Restraint, Eating-Concern, Shape-Concern, and Weight-Concern). Items are rated on 7-point forced-choice scales (0–6), with higher scores reflecting greater frequency/severity. The S-EDE has demonstrated good inter-rater and test-retest reliability (Grilo et al., 2005). In the present study, inter-rater reliability (rho) coefficients, based on N=20 independently rated cases ranged from 0.82 to 0.99 for the four EDE subscales.

2.3. Statistical Analysis

The original subscale structure of the EDE was first analyzed using internal consistency (coefficient alpha) reliability analyses and through confirmatory factor analysis (CFA; MPlus Version 6.11). Model estimation was based upon maximum likelihood. Imputation of missing data was based upon full information maximum likelihood; the proportion of missing data in EDE variables for the full study group was minimal, ranging from 0% to 2.6%, with the exception of one item (flat stomach) that had 50.6% missing data (because the investigators dropped this item after frequent observation that the concept was not relevant either linguistically or culturally in this study group). A CFA was performed testing the fit of the original EDE subscale structure (Fairburn & Cooper, 1993) and a second CFA

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was performed testing the fit of the alternative structure (Grilo et al., 2010). Model fit was evaluated on the basis of recommended standards (Hu & Bentler, 1999) for tests of model fit: CFI (criteria ≥0.900), TLI (criteria ≥0.900), RMSEA (criteria ≤0.060), and SRMR (criteria ≤0.080).

3. Results

3.1 Psychometric Characteristics of the Original EDE Interview

Table 1 summarizes internal consistency reliability analyses and correlations among the four original EDE subscales. Internal consistency of the EDE subscales ranged from 0.67 (Restraint) to 0.87 (Shape-Concern). CFA performed to test the original EDE scale structure revealed a poor fit: CFI=0.799, TLI=0.792, RMSEA=0.105, and SRMR=0.072. In contrast, the CFA based upon the modified EDE scale structure showed a good fit: CFI=0.986, TLI=0.973, RMSEA=0.064, and SRMR=0.039. Table 2 shows the factor loadings of the CFA.

4. Discussion

The present study evaluated the factor structure of the Spanish-Language version of the EDE in a predominately overweight (mean BMI of 33.2; 84.6% classified as overweight and 71.2% as obese) participant group of Latina/os. We used CFA to test the original and an alternative factor structure recently revealed by EFA/CFA methods (Grilo et al., 2010; Hrabosky et al., 2008). This study, and all previous four studies – two exploratory (Mannucci et al., 1997; Wade et al., 2008) and two involving statistical tests of fit via CFA (Bryne et al., 2010; Grilo et al., 2010) – failed to support the adequacy of the original EDE scale structure. In this study with Spanish-speaking-only Latina/os, we observed support for the brief 7-item, 3-factor structure identified and subsequently confirmed by CFA for overweight patients with BED (Grilo et al., 2010). The three factors, interpreted as Dietary Restraint, Shape/Weight Overvaluation, and Body Dissatisfaction, were also reported in an EFA/CFA study of the self-report version of the EDE performed with bariatric surgery patients (Hrabosky et al., 2008). The use of CFA, in contrast to other data-reduction methods – such as principal components and exploratory factor analyses – offers the advantage of statistical testing for goodness-of-fit for hypothesized factor structures which represents a more definitive examination of constructs.

With regard to the support for the 7-item 3-factor structure, we note several possible implications. Clinically, our findings suggest that clinicians/researchers with limited time and resources (a challenge well-known to community-based facilities where Latino/as receive most of their care) (Marques et al., 2011; Anez et al., 2005) might efficiently assess for eating-related pathology using these items. Although further research is needed to demonstrate the construct/predictive validity of such an abbreviated assessment, consistent findings across three diverse groups of overweight adults provide some degree of confidence.

More broadly, our findings have implications for understanding and assessing body-image. Our findings for predominately overweight Latina/os, like previous studies with diverse obese patients groups (Grilo et al., 2010; Hrabosby et al., 2008), identified a similar body dissatisfaction factor (which consisted of *both* shape- and weight-related dissatisfaction) and revealed that overvaluation of shape/weight items loaded together but separately from body dissatisfaction items. This psychometrically-established distinction is consistent with clinical perspectives about important differences regarding these cognitive aspects of body-image which have been extended from eating disorders in young people to obesity in adulthood (Masheb, Grilo, Burke-Martindale, & Rothschild, 2006). Most simply, body dissatisfaction

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is quite common but far fewer persons define themselves primarily on the basis of their shape/weight (i.e., overvaluation), which is viewed as more pathological and as a core cognitive feature of eating-disorder psychopathology (Grilo, Crosby et al., 2009; Grilo, Hrabosky, Allison, Stunkard, & Masheb, 2008; Grilo, Masheb, & White, 2010).

We note several study strengths and limitations as context for interpreting the findings. The study group was assessed reliably by bi-lingual doctoral research-clinicians trained in the EDE by the investigators following the same procedures used in their numerous studies with the English-language version. The findings, however, pertain to a study group of predominately overweight (84.6%) socioeconomically disadvantaged (only 23.7% attained more than high school education) Latino/as who chose to participate in research. It is uncertain whether our findings generalize to other Latino/a groups who may differ in demographic characteristics (e.g., younger, with higher education, English-speaking and more acculturated), clinical characteristics (e.g., underweight Latino/as or those with bulimia nervosa or anorexia nervosa), or who are unwilling to participate in research. Our study's use of culturally-sensitive recruitment and assessment procedures by fully bi-lingual research clinicians well-trained in Latino cultural constructs may have partly overcome well-known barriers to obtaining Latino/a participation in research (Perez-Escamilla, 2011; Anez et al., 2005). We also note that a recent large multi-site study documented that Latino/a participants in clinical trials for binge eating had significantly greater EDE shape, weight, and eating concerns and lower education levels than white participants (Franko et al., 2005) suggesting some degree of generalizability for our study. Although our study included men and women, we could not evaluate whether the factor structure was invariant across gender. Future studies should investigate the factor structure, including the alternative structure found here, and other aspects of the validity of the EDE among patients with eating disorders such as bulimia nervosa and bulimia nervosa.

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• Statement 1: Role of Funding Sources

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Highlights

- Confirmatory factor analysis revealed poor fit for original EDE structure.
- Confirmative factor analysis revealed good fit for alternative 3-factor structure.
- Three factors include restraint, shape/weight overvaluation, body dissatisfaction.
- 8-item 3-factor solution replicates recent studies with English-speaking groups.

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Table 1

Internal consistency and correlations of the original EDE factors.

			Correlations		
Factor	**α**	**Mean ± SD**	**2**	**3**	**4**
Original EDE					
1. Restraint	0.67	1.27 ± 1.27			
2. Eating Concern	0.74	0.90 ± 1.24	0.39***		
3. Shape Concern	0.87	2.69 ± 1.75	0.41***	0.63***	
4. Weight Concern	0.76	2.25 ± 1.50	0.44***	0.59***	0.88***

Note: α denotes coefficient alpha, a measure of internal consistency.

*** $p < 0.001$

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Table 2

Confirmatory factor analysis of EDE items.

EDE Item	Factor Loading		
	Factor 1	Factor 2	Factor 3
Restraint over eating	**1.00**		
Food avoidance	**1.31**		
Dietary rules	**0.68**		
Importance of shape		**1.00**	
Importance of weight		**0.94**	
Dissatisfaction with shape			**1.00**
Dissatisfaction with weight			**0.94**