

## Eating Disorders Among a Community-Based Sample of Chilean Female Adolescents

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The purpose of this study was to explore the prevalence and correlates of eating disorders among a community-based sample of female Chilean adolescents. Data were collected through structured interviews with 420 female adolescents residing in Santiago, Chile. Approximately 4% of the sample reported ever being diagnosed with an eating disorder. Multivariate logistic regression analyses revealed that those with higher symptoms of anxiety and who had tried cigarettes were significantly more likely to have been diagnosed with an eating disorder. Findings indicate that Chilean female adolescents are at risk for eating disorders and that eating disorders, albeit maladaptive, may be a means to cope with negative affect, specifically anxiety.

Over the past several decades, research has indicated that eating disorders do not discriminate against age, race, gender, ethnicity, or socioeconomic status (SES; e.g., Cachelin, Rebeck, Veisel, & Striegel-Moore, 2001; Carlat, Camargo, & Herzog, 1995; Crago, Shis-lak, & Estes, 1996; Mangweth-Matzek et al., 2006). Of particular concern is the mounting evidence that Latinas, a group once believed to be “protected” from such problems due to cultural ideals of larger curvier female physiques (e.g., Warren, Gleaves, Cepeda-Benito, Fernandez, & Rodriguez-Ruiz, 2005), are at increasing risk of developing eating disorders (e.g., Becker, Franko, Speck, & Herzog, 2003; Franko & George, 2008).

Latina adolescents residing in the United States have been reported to experience eating disorder symptoms at rates similar to (e.g., Granillo, Jones-Rodriguez, & Carvajal, 2005), and in some cases higher than (e.g., Robinson, Chang, Haydel, & Killen, 2001), their White counterparts. A national epidemiological study of U.S. Latina/o adults reported a 1.9% and 2.3% lifetime prevalence of bulimia nervosa (BN) and binge eating disorder (BED), respectively (Alegria et al., 2007). Although rates of anorexia nervosa (AN) among Latinas/os appear nonexistent, the lifetime prevalence of BN and BED

are similar to those found in the general population (1.5% and 3.5%, respectively; Hudson, Hiripi, Pope, & Kessler, 2007).

Knowledge of eating disorders among Latinas appears to be on the rise; however, much of this work has focused only on Mexican and Mexican American females. As important as this work is, Latinas/os are not a monolithic group and findings from one subgroup may not be readily generalized to other subgroups (Alegria, Canino, Stinson, & Grant, 2006).

Recent research has begun examining eating disorders in various Latina/o subgroups and evidence suggests that Latinas residing outside of North America are also at risk, particularly in newly industrialized areas where eating disorders tend to be more prevalent due to greater influence of Western cultural norms (American Psychiatric Association [APA], 2000). In fact, a recent epidemiological study examining the prevalence of psychological disorders in a nationally representative sample of Chileans found a 1.8% 6-month prevalence of eating disorders among Chilean females 15 years of age and older (Vicente et al., 2004). However, another study of Chilean adolescents found that 2.4–12.6% met criteria for eating disorder not otherwise specified (EDNOS; Behar, 2008), a category for eating disorder symptoms that do not meet full criteria for a specific eating disorder but present with significant clinical severity.

With continued globalization of Western cultural norms combined with Chile’s increasingly industrialized economy, it is likely that eating disorders will continue to be a problem among Chilean female

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adolescent unless greater efforts are made at prevention and early intervention. In order to effectively create and implement such programs there needs to be a better understanding of the risk and protective factors associated with eating disorders and related symptoms among Chilean female adolescents. Evidence suggests that family factors such as interaction and structure, and individual factors including psychiatric symptoms and exposure to media are associated with eating disorders and related symptoms among female Chilean adolescents (Behar, 2008; Cordella, 2006; Doerr-Zegers, Petrasic, & Morales, 1988; Mellor et al., 2008; Morales, Hernandez, & Dorr-Zegers, 1994). However, in addition to being limited in number, this literature largely focuses on clinical samples, which typically only include those with higher SES who have the means to access treatment. Thus, these findings might not generalize to the large percentage of Chilean female adolescents who present with symptoms but do not receive a diagnosis or treatment. Furthermore, to the authors' knowledge, no studies have examined the effects of family and individual factors simultaneously to determine which are most influential and possibly most important to address in prevention and intervention of eating disorders among this population.

The purpose of the present study was to examine eating disorders among a nonclinical community-based sample of female Chilean adolescents from mid- to low SES and to establish which factors are most strongly related to eating disorders among this population by testing a model that includes individual (i.e., physical appearance esteem, symptoms of anxiety and depression, youth substance use) as well as familial variables (i.e., family involvement).

## METHOD

### Participants

Participants for this study included adolescents and their families who had previously participated in a study of developmental and behavioral effects of iron supplementation (Lozoff et al., 2003). The youth and their families were contacted by project staff and invited to participate in a two-part assessment of health, mental health, and substance use among community-dwelling adolescents and their families in Santiago, Chile. This is a collaborative study between the University of Chile Institute of Nutrition and Food Technology and the University of Michigan with funding from the National Institute on Drug Abuse. The present study only focuses on data

from female participants from the first assessment. Four hundred and fifty-eight females participated in the study, but due to missing data on the variables included, only 420 were included in the analyses. Mean age was 14 years ( $SD = 1.3$ ). Participants were of mid- to low SES. No differences in the participants' age and family's SES were observed between the 420 and 458 individuals.

### Procedures

Youth completed a 2-hour interviewer-administered questionnaire with standardized measures that were pilot tested and validated with the population under investigation (Delva & Castillo, 2010). Interviews included assessments of interpersonal relations (e.g., family), youths' thoughts and behaviors in various domains (e.g., physical appearance), health/mental health status (e.g., mood, eating disorders, substance use), and other topics not germane to the current study. Interviews were conducted in Spanish by trained Chilean psychologists. Youth assent and parental consent were obtained before the interviews. The study received approval from the institutional review boards of the corresponding universities.

### Measures

**Eating disorders.** Participants' response to the question "Has a doctor ever told you that you had an eating disorder like anorexia or bulimia?" from the health subscale of the Child Health and Illness Profile (Starfield et al., 1993) was used to identify eating disorder diagnoses. Response categories included: "No, never," "Yes, but NO PROBLEMS with it in the last 12 months," and "Yes, and HAD PROBLEMS with it in last 12 months." We were only interested in whether participants had *ever* been diagnosed with an eating disorder; thus the two responses "Yes, but NO PROBLEMS with it in the last 12 months," and "Yes, and HAD PROBLEMS with it in the last 12 months," were collapsed into a dichotomous variable, ever (1) and never (0) been diagnosed with an eating disorder.

**Anxiety and depression.** The Child Behavioral Check List-Youth Self Report (Achenbach & Rescorla, 2001) was utilized to assess for symptoms of anxiety and depression. The original measure had 10 subscales, 2 of which measure symptoms of anxiety and depression. All the items of the YSR begin with the following: "Below is a list of items that describe kids. For each item that describes you

now or within the past 6 months, please tell me if the item is 'very true or often true,' 'somewhat or sometimes true' or is 'not true.'" Response options ranged from 0 = *not true* to 2 = *very true or often true*. Higher scores represent more symptoms.

One subscale assessed withdrawn and depressed symptoms and the other assessed anxious and depressed symptoms. Given that both scales included items of anxiety and depression it would be hard to determine the independent effects of either psychological symptoms. Although anxiety and depression are highly correlated, they are distinct constructs (Brady & Kendall, 1992) and may have different effects on eating disorders. Using factor analysis we identified two distinct scales, one for anxiety and one for depression. The anxiety subscale included 10 items (e.g., "I am too shy or timid," "I am afraid of certain animals, situations, or places (other than school)," "I am too fearful or anxious") with good internal reliability (Cronbach's  $\alpha = .71$ ).

The depression subscale included 7 items (e.g., "I am unhappy, sad, or depressed," "I feel worthless or inferior," "I cry a lot") and also had good internal reliability (Cronbach's  $\alpha = .77$ ).

**Physical appearance esteem.** The 6-item subscale of the Self Perception Profile for Adolescents (Harter, 1988) was used to assess adolescents' perception of their physical appearance. All items began with the phrase "How do you feel about" followed by items such as "how you look" and "the way your body is." Responses ranged from 1 = *very unhappy* to 4 = *very happy*. Responses were summed and higher scores represented more positive attitudes about physical appearance (Cronbach's  $\alpha = .87$ ).

**Substance use.** Following national school-based surveys of drug use conducted in Chile and the United States, youth were provided with a list of substances and asked if they had ever used any of them. Response options were either *yes* (1) or *no* (0). Responses in the affirmative were followed by further questioning. For the purposes of this study, we were only interested in *ever* use of cigarettes and/or alcohol.

**Family involvement.** The 5-item family involvement subscale from the Child Health and Illness Profile (Starfield et al., 1993) was used to assess family functioning and the degree to which families engaged in activities together. All items began with the phrase "Thinking about your family, about how many days in the past 4 weeks did your parents or other adults in your family . . ." Example items

were "talk with you or listen to your opinions or ideas," "eat meals with you," and "did you and your family get along." Response options included 1 = *no days*, 2 = *1-3 days*, 3 = *4-6 days*, 4 = *7-14 days*, or 5 = *15-28 days*. Higher scores indicated more family involvement (Cronbach's  $\alpha = .74$ ).

**Demographics.** Assessments of age and family SES were included as demographic information. Youth age was based on self-report, and family SES was based on parent reports. SES was assessed with 13 items from the Graffar instrument (Graffar, 1956), an SES scale designed with questions that are sensitive to circumstances in developing countries. Example items include "total number of adults in the same house," "type of job by head of household," "father's education," and "type of sewage accommodations." The measure was completed by the parent who brought the youth to the interview. Higher scores indicate higher SES.

## Analysis

We used bivariate and multivariate logistic regression analysis to examine associations between independent variables and the dependent variable, ever being diagnosed with an eating disorder. We also calculated predicted probabilities using the SPOST suite of utilities developed by Long and Freese (2005). Analyses were conducted with STATA 10.0 (Stata Corp, 2009).

## RESULTS

Among our sample of female Chilean adolescents, 3.8% reported ever being diagnosed with an eating disorder, 34.8% reported ever smoking cigarettes, and 40.2% reported ever using alcohol. As shown in Table 1, on average these adolescents were "somewhat happy" with their physical appearance, were low in symptoms of anxiety and depression, and had moderate levels of family involvement.

Bivariate analyses indicated that being diagnosed with an eating disorder was significantly positively associated with symptoms of anxiety (odds ratio [OR] = 1.21, 95% CI = 1.05-1.39), symptoms of depression (OR = 1.25, 95% CI = 1.07-1.46), and cigarette use (OR = 3.28, 95% CI = 1.17-9.23). We also found that physical appearance esteem (OR = 0.84, 95% CI = 0.76-0.95) and family involvement (OR = 0.89, 95% CI = 0.81-0.99) were inversely related to being diagnosed with an eating disorder. Age, SES, and alcohol use were not associated with being diagnosed with an eating disorder.

TABLE 1  
Means, Standard Deviations, and Percentages of All Independent  
and Dependent Variables ( $N = 420$ )

Variable	Mean	SD	%
Ever have an eating disorder	0.04	0.2	3.8
Demographics			
Age	14.3	1.4	
SES	33.0	6.7	
Independent variables			
Physical appearance	18.2	4.1	
Depression	2.8	2.7	
Anxiety	7.4	3.6	
Family involvement	18.3	4.4	
Cigarette use (Ref = 0)	0.3	0.5	34.8
Alcohol use (Ref = 0)	0.4	0.5	40.2

Note. SES = socioeconomic status.

Multivariate logistic regression analyses, shown in Table 2, revealed that when all factors were considered simultaneously (age, SES, physical appearance esteem, symptoms of depression and anxiety, cigarette and alcohol use), only having symptoms of anxiety (OR = 1.21, 95% CI = 1.00–1.46) and using cigarettes (OR = 3.55, 95% CI = 1.01–12.53) were associated with being diagnosed with an eating disorder.

For a more intuitive measure of effect size we calculated the predicted probability of being diagnosed with an eating disorder for symptoms of anxiety (Figure 1) as well as for cigarette smoking (Figure 2).

TABLE 2  
Bivariate and Multivariate Logistic Regression Analyses:  
Correlates of Being Diagnosed With an Eating Disorder Among  
Chilean Female Adolescents ( $N = 420$ )

Variable	Bivariate		Full Model	
	OR	95% CI	OR	95% CI
Demographics				
Age	1.05	0.73–1.52	0.90	0.57–1.44
SES	0.97	0.89–1.05	0.94	0.86–1.02
Independent variables				
Physical appearance	0.84	0.74–0.94	0.89	0.78–1.02
Depression	1.27	1.09–1.48	1.01	0.82–1.25
Anxiety	1.23	1.06–1.41	1.21	1.00–1.46
Family involvement	0.88	0.79–0.99	0.92	0.82–1.05
Cigarette use (Ref = 0)	3.93	1.25–12.30	3.55	1.01–12.53
Alcohol use (Ref = 0)	1.51	0.52–4.45	0.68	0.19–2.40

Note. CI = confidence interval; OR = odds ratio; SES = socioeconomic status. All analyses adjusted for demographic controls, age, and SES.

## DISCUSSION

Latina adolescents, both in and outside the United States, are increasingly at risk for eating disorders (e.g., Granillo et al., 2005; Unikel & Bojorquez, 2007). Recent evidence suggests that eating disorders are prevalent among Chilean females (Vicente et al., 2004). However, research on eating disorders is limited both in number and by the fact that the focus is largely on clinical populations. There is evidence that many Chilean females present with eating disorder symptoms but do not meet criteria for a clinical diagnosis. Thus, focusing only on clinical populations may limit our understanding of what influences eating disorders in the larger Chilean female adolescent population. Furthermore, clinical populations typically consist of those with higher SES backgrounds who have the means to access treatment, and the factors that influence eating disorders may differ between those with higher versus lower SES. The purpose of this study was to examine the prevalence and associations of eating disorders among a nonclinical sample of Chilean female adolescents from mid- to low SES in Santiago, Chile. Given that eating disorders are most commonly found among adolescents in industrialized nations (e.g., Miller & Pumariega, 2001), Chilean adolescents residing in Santiago, Chile, a country with a strong market-driven economy well on its way to becoming industrialized, may be at particular risk.

We found that among Chilean female adolescents from the community, 3.8% reported ever being diagnosed with an eating disorder. This finding is consistent with the literature that eating disorders do exist in Chile and supports our hypothesis that Chilean female adolescents are a particularly at-risk group. Furthermore, our results also support that eating disorders affect not only those with more affluent backgrounds (Crago et al., 1996; Gard & Freeman, 1996). Our sample of Chilean female adolescents came from mid- to low SES families and SES was not related to having been diagnosed with an eating disorder.

We found that although having lower physical appearance esteem, lower family involvement, higher symptoms of depression and anxiety, and ever smoking cigarettes were all related to being diagnosed with an eating disorder among this population, when all factors were considered simultaneously (including age and SES as demographic controls), only having higher symptoms of anxiety and cigarette use remained related to being diagnosed with an eating disorder. These findings are consistent with U.S. literature that suggests that self-esteem is not the primary predictor of eating

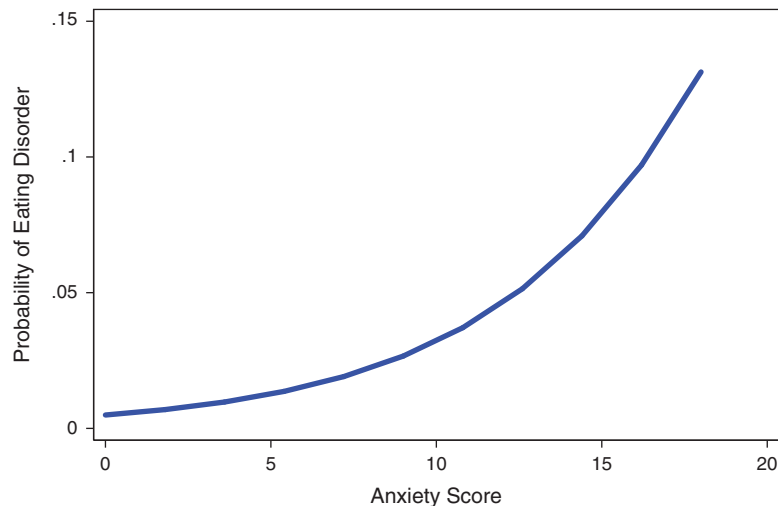


FIGURE 1 Probability of being diagnosed with an eating disorder based on reported symptoms of anxiety among Chilean female adolescents.

disorders (Shea & Pritchard, 2007), that family factors are only part of the complex story of eating disorders among adolescents (Le Grange, Lock, Loeb, & Nicholls, 2010), and that substance use is common among those with eating disorders (Braun, Sunday, & Halmi, 2009). Findings also support U.S. and Chilean studies that have found that eating disorders rarely present without psychiatric comorbidity (Striegel-Moore et al., 2008). However, this is the first study to suggest that anxiety may be one of the most critical risk factors for eating disorders among Chilean female adolescents.

In the United States, depression and anxiety are the most common psychiatric comorbidities with eating disorders (Braun et al., 2009). However, in our

full model where both symptoms of depression and anxiety are considered simultaneously, only anxiety was related to being diagnosed with an eating disorder. Cigarette use also remained significantly positively associated with being diagnosed with an eating disorder. Smoking cigarettes is often used as a means to relieve stress, particularly among adolescent females (e.g., Byrne & Mazanov, 1999). Together these results highlight not only that anxiety is a particularly important factor to consider in eating disorders among Chilean female adolescents, but that in order to determine which factors are most influential in eating disorders and thus should be targeted in prevention and intervention programs, it is important to examine multiple predictors simultaneously.

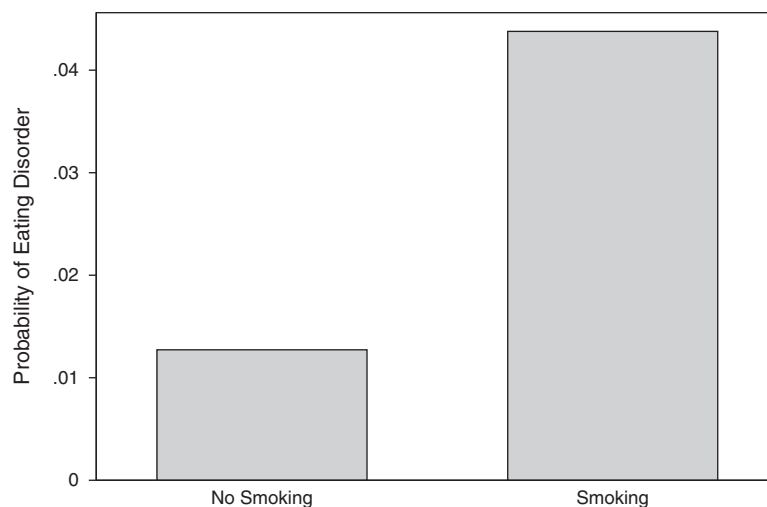


FIGURE 2 Probability of being diagnosed with an eating disorder based on reported ever use of cigarettes among Chilean female adolescents.

Although our study has several strengths, the findings should be viewed in the context to the following limitations. First as this study was mainly about general health behaviors and substance use, eating disorder diagnosis was not determined using validated scales. Rather, participants reported ever being diagnosed, by a doctor, with AN or BN (based on the *Diagnostic and Statistical Manual-IV*; APA, 2000). Second, given the format of the question assessing for eating disorder diagnosis we also cannot determine exactly which eating disorder participants were diagnosed with. However, this study was not designed to be an "eating disorder study," yet we found lifetime prevalence of eating disorders reported was remarkably consistent with that of eating disorder studies. To get a more complete picture of eating disorders among Chilean female adolescents, future studies should include measures of current symptoms (not just diagnosis) and assessment for AN, BN, BED, and EDNOS. Third, this study was cross-sectional in nature; thus we cannot determine the directionality of the relationship between being diagnosed with an eating disorder and related factors (e.g., substance use, symptoms of depression and anxiety). At a minimum, longitudinal data would be necessary to begin to ascertain the direction of any causal relationships.

Notwithstanding these limitations, with our large sample of Chilean female adolescents, this study offers several important contributions. First we found support for existing theories in the general population: (1) Latinas are not impervious to eating disorders, (2) eating disorders do not only affect those of higher SES, and (3) eating disorders are comorbid with substance use and other psychological symptoms. Second, not only did we find that Latinas residing outside North America, specifically non-clinical adolescents in Chile, are at risk of eating disorders, but we also identified associated risk factors for this population. Our findings suggest that eating disorders may manifest themselves quite similarly across some cultures. However, more research needs to be conducted cross-culturally to test this hypothesis. Finally, in addition to being one of very few studies to examine the prevalence and correlates of eating disorders among Chilean female adolescents, our study is one of the only ones to test a model of correlates to determine which factors pose the greatest risk for eating disorders among this population. Results show that anxiety is the greatest risk factor for eating disorders among Chilean female adolescents, supporting theory that eating disorders are more than just illnesses of vanity and

weight concerns; they are coping mechanisms, albeit maladaptive.

Taken together, these findings not only add to the current literature on eating disorders among Latinas, but they may also have important implications for those who are involved with Chilean female adolescents. Gaining a better understanding of eating disorders and associated factors within this population may help teachers, social workers, psychologists, physicians, nurses, religious figures, and even family members effectively identify, prevent, and/or intervene with these distressing and sometimes deadly disorders.

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