

Norms for the Spanish version of the Eating Disorders Examination Questionnaire (S-EDE-Q)

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Abstract

Background: This study presents normative data on the Spanish Version of the Eating Disorders Examination Questionnaire (S-EDE-Q) for adolescents and young adults in Spain. **Method:** A sample of 1,543 men and women, aged 12 - 21 years, completed the S-EDE-Q as part of a larger assessment battery. **Results:** Means, standard deviations, clinical significance and percentile ranks for the raw Restraint, Eating Concern, Shape Concern, and Weight Concern subscales and the Global Score by age group and gender are presented. Data on any and regular occurrences of dieting, bingeing and compensatory behaviors by age group and gender are reported. Compared with men, women scored higher on all the subscales and reported more key eating disorders (ED) and compensatory behavior. Compared with adolescents, young adults scored higher on the Restraint and Shape Concern subscales and reported more dietary restraint (DR), objective binge episodes (OBE) and diuretic misuse (DIUR). **Conclusions:** These results can help researchers and clinicians interpret the S-EDE-Q scores of adolescents and young adults in Spanish-speaking countries.

Keywords: EDE-Q, Spanish version, normative data, adolescents, young adults.

Resumen

Datos normativos de la versión española del Eating Disorders Examination Questionnaire (S-EDE-Q). **Antecedentes:** este estudio presenta datos normativos de la versión española del Eating Disorders Examination Questionnaire (S-EDE-Q) para adolescentes y adultos jóvenes de ambos géneros en España. **Método:** una muestra de 1.543 varones y mujeres de 12 a 21 años completaron el S-EDE-Q. **Resultados:** se presentan medias, desviaciones típicas, significación clínica y percentiles para las cuatro escalas y para la puntuación global por grupos de edad y género. Se aportan datos de ocurrencia de dieta, sobreingesta y conductas compensatorias por grupos de edad y género. Las mujeres obtuvieron puntuaciones más altas en todas las subescalas e informaron de más sintomatología específica de trastornos alimentarios que los varones. Los adultos obtuvieron puntuaciones más altas en las subescalas Restricción alimentaria y Preocupación por la figura e informaron de más restricción, episodios de sobreingesta y abuso de diuréticos que los adolescentes. **Conclusiones:** estos resultados pueden ser de utilidad para la interpretación de puntuaciones del S-EDE-Q de varones y mujeres adolescentes y jóvenes en países de habla hispana.

Palabras clave: EDE-Q, versión española, datos normativos, adolescentes, jóvenes.

The Eating Disorders Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994) is a widely used measure of key attitudes and eating-disordered behaviour derived from the Eating Disorder Examination interview (EDE; Fairburn & Cooper, 1993). The EDE is considered to be the best available method for the diagnosis and assessment of eating disorders (ED), according to the fourth edition, text revision, of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR; American Psychiatric Association; APA, 2000) and has been used by many investigators (Garner, 2002; Wilson, 1993). However, the EDE presents various disadvantages, including the extensive training required for the interviewers and the time needed for its administration (Wilfley, Schwartz, Spurrell, & Fairburn, 1997), which makes it, like all clinical interviews,

unsuitable for the screening of ED in large community samples (Fairburn & Beglin, 1994). Thus, the EDE has been adapted to the EDE-Q, a relatively brief self-report format (36 items), which is an efficient and cost-effective alternative (Fairburn & Beglin, 1994). The EDE-Q is recommended for identifying probable ED cases (Mond, Hay, Rodgers, & Owen, 2006). Research also shows adequate correlations between the EDE and the EDE-Q in the assessment of restraint, purging, and shape and weight concerns (Fairburn & Beglin, 1994; Mond, Hay, Rodgers, Owen, & Beumont, 2004); acceptable test-retest reliability and internal consistency (Luce & Crowther, 1999), and good criteria and concurrent validity (Mond et al., 2004).

The Spanish version of the EDE-Q (S-EDE-Q) has been used by clinicians for the last decade in Spain (Villarreal, Penelo, Portell, & Raich, 2011) and employed as a screening instrument in the general Spanish-speaking population (Peláez-Fernández, Labrador, & Raich, 2007). The S-EDE-Q has shown satisfactory internal consistency for the four subscales' scores (Cronbach's alpha \geq .81) (Villarreal et al., 2011), acceptable results as regards sensitivity, specificity, and positive and negative predictive values,

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when compared with the EDE, positive and significant correlation with EDE diagnoses (Peláez-Fernández, Labrador, & Raich, 2012) and acceptable short-term (5-14 days) test-retest reliability: Spearman r 's ranging from .71 to .81 for the four subscales' scores (Elder & Grilo, 2007).

In addition to the psychometric properties, normative values are needed for interpretation. Five studies present normative EDE-Q data for samples of women: 12-14 year old British adolescents (Carter, Stewart, & Fairburn, 2001), 18-42 year old Australian women from the wider community (Mond et al., 2006), 18-25 year old undergraduates in the United States (Luce, Crowther, & Pole, 2008), 18-66 year old undergraduates in Eastern Norway (Rø, Reas, & Lask, 2010), and 18-66 year old Swedish women from the general and clinical population (Welch, Birgegård, Parling, & Ghaderi, 2011). In contrast, only one study reports normative EDE-Q data for men, specifically for 18-26 year old male undergraduates in the United States (Lavender, De Young, & Anderson, 2010). Two studies have provided normative data for the S-EDE-Q (Penelo, Villarroel, Portell, & Raich, 2012; Villarroel et al., 2011). Participants in the mentioned studies were respectively undergraduate men and women aged 18 to 30 enrolled at the University of Barcelona. To date, no normative S-EDE-Q data for adolescents has been published. Given that ED psychopathology levels may vary across countries (Mond et al., 2006) and that the use of the S-EDE-Q for research and clinical purposes with adolescent and young adult men and women is frequent, there is a need to provide normative data for the specific population on which the instrument is used (AERA, APA, & NCME, 1999). Thus, the present study was designed to estimate normative S-EDE-Q data and to explore the occurrence of key ED eating and compensatory behavior among adolescents and young adults of both sexes. We hypothesized that women would score higher on the S-EDE-Q subscales and report more ED features than men. We also hypothesized that young adults would present higher scores on the S-EDE-Q subscales and would report more key ED eating and compensatory behaviors than adolescents, since in older individuals, cases of recent appearance and cases of longer evolution coexist, causing a greater prevalence of ED symptomatology among adults than in minors (Peláez-Fernández et al., 2007).

The objectives of this study were: a) to establish norms for the S-EDE-Q for the general population among adolescent and young adult men and women in a large epidemiological study of ED behavior, and b) to report data on any and regular occurrences of dieting, bingeing and compensatory behavior among adolescents and young adults.

Method

Participants

A total of 1,582 students, registered during the 2001-2002 academic year in Secondary Obligatory Education (SOE), high school, and university education, took part in the study. Of these, 39 were excluded for different reasons (e.g., providing incomplete answers to the questionnaires, not understanding the Spanish language). Thus, the final sample was confined to 1,543 students: 916 females (59.4%) and 627 males (40.6%). Age range: 12-21 years. The mean age of the participants was 15.7 years ($SD= 2.3$; range= 12-21). The average weight was 60.0 Kg. ($SD= 12.6$; range= 31.5-118.5) and the average height was 1.65 m ($SD= .09$; range=

1.32-2.15) corresponding to a mean body mass index (BMI; kg/m²) of 22.0 ($SD= 3.5$; range= 14.5-41.6). Two hundred and fifty-six respondents (16.6%) had a BMI above 25 and 444 (28.8%) had a BMI below 20. The sample was mainly Caucasian. Information regarding the ethnic makeup of the sample was not collected.

Sampling

A random sampling by conglomerates was carried out. The first step was the selection of a random sample of education centers in the region of Madrid (Spain). Of the 20 selected education centers (schools, high schools, and universities), only 12 agreed to participate in the study. Five of the schools were public; three were public at the elementary level but private at the high school level; and four were private. The second step was the random selection of the years and classes. The final sample was made up of a total of 63 SOE, high school and university classes.

Measures

Features of ED were measured using the S-EDE-Q (Peláez-Fernández, 2004). It is a 38-item self-report questionnaire that assesses behaviors, attitudes and feelings related to eating and body image over the past 28 days. Four subscale scores: Restraint, Eating Concern, Shape Concern, and Weight Concern, are derived from the average of the 22 items addressing attitudinal aspects of ED psychopathology. The response format of those items is a 7-point Likert-type scale (0: *never*; 6: *everyday*). The global score is the average of the four subscale scores. The frequency of key ED eating and compensatory behaviors is assessed in terms of the average number of weekly episodes occurring for the past four weeks. To facilitate the understanding of the items for all the students (especially adolescents, aged 12 and 14), the version of the EDE-Q that was translated into Spanish was the one adapted by Carter et al. (2001), in which certain words and phrases from the original version (Fairburn & Beglin, 1994) were replaced with simpler language. For example, the phrase, "what other people would regard as an unusually large amount of food given the circumstances" was replaced by "what other people would think a very large amount of food given the situation." The time frame used in the S-EDE-Q was three months for items referring to key ED behaviors (Items 15-36) and 28 days for the rest of the items (Items 1-14). At the end of the questionnaire, we added two questions (only for female participants) regarding the irregularity of the menstrual cycle over the last three months. Socio-demographic information was also collected.

Procedure

The administration of the study was accomplished in a single 30 minute session. The students were informed that their participation was entirely voluntary and that refusal to participate was not going to be penalized in any way. To avoid people with ED refusing to participate in order to conceal their condition, the study was presented to the students as seeking to find out about their opinions and habits concerning body image or feeding issues and it was clearly indicated that the results would be strictly confidential. Participants were weighed and their height measured shoeless and in light clothing. Informed consent was obtained from the students and also from their parents in the case of minors.

Data analysis

Analyses were conducted with the SPSS 15 (SPSS Inc 2006). A series of Analysis of Variance (ANOVA) tests and Pearson's chi-square tests were used to examine for differences between genders and age groups. The internal consistency of the S-EDE-Q scores was analyzed with Cronbach's α coefficient. To compare our data with results from previous studies, we used the one-sample t-test for quantitative measures and binominal tests for dichotomous variables.

Results

S-EDE-Q norms

Means, standard deviations, percentile ranks and clinical significance (i.e. percentage of participants scoring ≥ 4.0 ; Carter et al., 2001) for S-EDE-Q subscales for adolescent and young adult men and women are presented in Table 1. ANOVA analyses were conducted to study the differences between genders and age groups. Women scored higher on all the subscales (Restraint: $F_{(1,1541)} = 133.29, \eta^2 = .10$; Eating Concern: $F_{(1,1543)} = 94.15, \eta^2 = .07$; Shape Concern: $F_{(1,1537)} = 204.51, \eta^2 = .14$; Weight Concern: $F_{(1,1540)} = 133.01, \eta^2 = .10$; Global Score: $F_{(1,1543)} = 180.56, \eta^2 = .13$; all $ps < .001$), and adult participants scored higher on Restraint ($F_{(1,1541)} = 8.99, \eta^2 = .01$), Shape

Concern ($F_{(1,1537)} = 7.65, \eta^2 = .01$) and Global Score ($F_{(1,1543)} = 4.75, \eta^2 = .00$) (all $ps < .05$).

There were no statistically significant differences between the private, public and mixed (i.e. public at the elementary level and private at the high school level) schools for any S-EDE-Q subscales.

Acceptable internal consistency (Cronbach alpha) for the four subscales of the S-EDE-Q: Restraint (.86), Eating Concern (.75), Shape Concern (.93) and Weight Concern (.74) was found (Peláez-Fernández et al., in press).

Occurrence of ED behavior

Table 2 shows the proportion of participants (according to age group and gender) who reported any or regular occurrence of key ED eating and compensatory behavior.

Pearson's chi-square tests were used to examine for differences between genders and age groups. For regular occurrence, dietary restraint (DR) was defined as going "for long periods of time (8 hours or more) without eating anything to control your shape or weight" (EDE-Q No. 2) for an average of at least three times per week over the past 28 days. For regular occurrence, excessive exercise (EX) was defined "as exercising hard to control your shape or weight" (EDE-Q No. 28) for an average of at least five times per week over the past 28 days. For the other behaviors: objective binge episodes (OBE), subjective binge episodes (SBE),

	Adolescent women (12 - 17 yr-old) (n= 612)				
	Global score	Restraint	Eating concern	Shape concern	Weight concern
Mean (SD)	1.41 (1.34)	1.12 (1.43)	0.84 (1.85)	1.98 (1.76)	1.70 (1.60)
Clinical sig*	5.01%	5.88%	2.18%	19.16%	11.84%
Percentile rank					
5	0.00	-	-	-	-
10	0.05	-	-	0.00	-
15	0.13	-	-	0.13	0.00
20	0.19	-	-	0.25	0.20
25	0.29	-	0.00	0.38	0.40
30	0.41	0.00	0.20	0.63	0.40
35	0.52	0.20	0.20	0.75	0.60
40	0.65	0.20	0.20	1.00	0.80
45	0.79	0.40	0.40	1.13	1.00
50	0.95	0.40	0.40	1.43	1.20
55	1.17	0.60	0.60	1.75	1.40
60	1.44	0.80	0.60	2.13	1.60
65	1.66	1.00	0.80	2.63	2.00
70	1.94	1.40	1.00	3.00	2.40
75	2.22	1.80	1.40	3.38	3.00
80	2.61	2.20	1.60	3.88	3.20
85	3.06	2.80	2.00	4.25	3.60
90	3.45	3.40	2.40	4.75	4.00
95	4.06	4.20	3.20	5.13	4.80
99	5.48	6.00	4.48	6.00	6.00

* Clinical significance: Percentage of participants scoring ≥ 4.0 on each subscale

	Young-adult women (18 - 21 yr-old) (n= 304)				
	Global score	Restraint	Eating concern	Shape concern	Weight concern
Mean (SD)	1.41 (1.19)	1.20 (1.32)	0.77 (0.93)	2.01 (1.56)	1.65 (1.44)
Clinical sig*	3.30%	5.96%	0.99%	13.25%	10.23%
Percentile rank					
5	0.00	-	-	0.00	-
10	0.11	-	-	0.13	0.00
15	0.21	-	-	0.38	0.20
20	0.34	0.00	-	0.50	0.40
25	0.45	0.20	0.00	0.75	0.40
30	0.56	0.20	0.20	0.90	0.60
35	0.66	0.40	0.20	1.13	0.80
40	0.78	0.40	0.20	1.25	0.80
45	0.91	0.60	0.40	1.50	1.00
50	1.08	0.80	0.40	1.63	1.20
55	1.27	0.80	0.60	1.88	1.40
60	1.47	1.00	0.60	2.13	1.80
65	1.63	1.20	0.80	2.50	2.00
70	1.92	1.40	0.80	2.75	2.40
75	2.12	2.00	1.20	3.13	2.60
80	2.44	2.20	1.40	3.50	2.84
85	2.82	2.60	1.60	3.75	3.40
90	3.36	3.40	2.20	4.38	4.00
95	3.67	4.20	2.96	5.13	4.76
99	4.58	4.80	4.38	5.63	5.20

* Clinical significance: Percentage of participants scoring ≥ 4.0 on each subscale

self-induced vomiting (SIV), laxative misuse (LAX) and diuretic misuse (DIUR), subjective regular occurrence was defined as at least twice a week over the past 28 days. Women said they engaged more in any DR ($\chi^2= 63.10; p<.001$), regular DR ($\chi^2= 11.43; p<.05$),

any SBE ($\chi^2= 40.00; p<.001$), regular SBE ($\chi^2= 33.06; p<.001$), any SIV ($\chi^2= 15.82; p<.001$), regular SIV ($\chi^2= 9.11; p<.05$), any LAX ($\chi^2= 15.30; p<.001$), regular LAX ($\chi^2= 10.48; p<.05$), any DIUR ($\chi^2= 20.66; p<.001$) and regular DIUR ($\chi^2= 17.85; p<.001$).

Table 1 (continuation)
Means, standard deviations, and percentile ranks for adolescent and young adult men and women

	Adolescent men (12 - 17 yr-old) (n= 502)				
	Global score	Restraint	Eating concern	Shape concern	Weight concern
Mean (SD)	0.54 (0.78)	0.35 (0.71)	0.33 (0.58)	0.74 (1.12)	0.74 (1.35)
Clinical sig*	0.76%	0.25%	0.00%	3.30%	2.03%
Percentile rank					
5	-	-	-	-	-
10	-	-	-	-	-
15	-	-	-	-	-
20	0.00	-	-	-	-
25	0.03	-	-	-	-
30	0.05	-	-	-	-
35	0.10	-	-	0.00	0.00
40	0.15	-	-	0.13	0.20
45	0.20	-	-	0.25	0.20
50	0.27	-	-	0.25	0.20
55	0.33	0.00	0.00	0.38	0.40
60	0.38	0.20	0.20	0.50	0.50
65	0.49	0.20	0.20	0.63	0.60
70	0.55	0.20	0.40	0.75	0.80
75	0.73	0.40	0.40	1.00	1.00
80	0.89	0.60	0.60	1.25	1.20
85	1.10	0.80	0.80	1.63	1.50
90	1.51	1.20	1.20	2.13	2.00
95	2.33	2.00	1.60	3.22	3.05
99	3.29	3.60	2.81	5.26	4.82

* Clinical significance: Percentage of participants scoring ≥ 4.0 on each subscale

Table 1 (continuation)
Means, standard deviations, and percentile ranks for adolescent and young adult men and women

	Young-adult men (18 - 21 yr-old) (n= 125)				
	Global score	Restraint	Eating concern	Shape concern	Weight concern
Mean (SD)	0.58 (0.83)	0.46 (0.90)	0.33 (0.74)	0.88 (1.12)	0.67 (0.96)
Clinical sig*	1.71%	1.71%	0.85%	2.56%	2.56%
Percentile rank					
5	-	-	-	-	-
10	-	-	-	-	-
15	0.00	-	-	-	-
20	0.06	-	-	0.00	-
25	0.11	-	-	0.13	-
30	0.14	-	-	0.13	0.00
35	0.18	-	-	0.25	0.06
40	0.25	-	-	0.25	0.20
45	0.28	-	-	0.38	0.20
50	0.31	-	-	0.38	0.20
55	0.37	0.00	0.00	0.61	0.40
60	0.44	0.20	0.20	0.75	0.40
65	0.52	0.34	0.20	0.84	0.80
70	0.65	0.40	0.20	1.00	0.80
75	0.76	0.55	0.40	1.13	1.00
80	0.85	0.60	0.40	1.43	1.00
85	1.00	0.86	0.60	2.04	1.40
90	1.18	1.44	0.84	2.40	1.60
95	2.22	2.64	1.86	3.26	2.64
99	4.91	5.31	4.58	5.58	4.96

* Clinical significance: Percentage of participants scoring ≥ 4.0 on each subscale

Table 2
Proportion of participants (according to age group and gender) engaging in any or regular occurrences of dieting, bingeing or compensatory behaviour

Key behavior	Female				Male			
	Adolescent (aged 12-17) (n= 612)		Young adult (aged 18-21) (n= 304)		Adolescent (aged 12-17) (n= 502)		Young adult (aged 18-21) (n= 125)	
	Occurrence (%)		Occurrence (%)		Occurrence (%)		Occurrence (%)	
	Any	Regular	Any	Regular	Any	Regular	Any	Regular
DR ^a	25.27	7.19	27.06	6.93	7.12	2.29	11.11	3.42
OBE ^b	25.34	17.35	36.27	20.00	24.33	13.90	35.71	19.64
SBE ^c	21.46	14.16	20.07	12.24	7.79	3.64	7.76	4.31
SIV ^d	4.65	2.88	4.01	2.34	0.51	0.26	0.85	0.85
LAX ^e	3.06	1.97	4.00	3.33	0.25	0.26	0.00	0.00
DIUR ^f	3.06	2.84	5.28	4.29	0.00	0.00	0.00	0.00
EX ^g	43.96	10.48	30.30	6.73	32.89	11.58	45.61	9.65

^a DR: Dietary Restraint; ^b OBE: Objective Binge Episodes; ^c SBE: Subjective Binge Episodes; ^d SIV: Self-induced vomiting; ^e LAX: Laxative misuse; ^f DIUR: Diuretic misuse; ^g EX: Excessive exercise

Discussion

There were no significant differences between men and women in their engagement with any or regular OBE, and any or regular EX (all $ps>.10$). Adult participants reported more occurrence of any DR ($\chi^2= 5.81; p<.05$), any OBE ($\chi^2= 16.77; p<.001$) and any DIUR ($\chi^2= 5.72; p<.05$). There were no significant differences between adult and minor participants in the informed occurrence of any or regular SBE, any or regular SIV, any or regular LAX and any or regular EX (all $ps>.05$). Nor were there significant differences in the report of regular DR, regular OBE, and regular DIUR (all $ps>.05$) between adult and minor participants.

In order to facilitate the comparison of results from the present study with other studies that have presented EDE-Q normative data, a compilation of results is presented in Table 3.

During the last decade, clinicians and researchers have used the S-EDE-Q widely. Despite the psychometric properties of the S-EDE-Q being well established, to date only two studies have presented normative data using this instrument (Penelo et al., 2012; Villarroel et al., 2011). The population tested was undergraduate men and women. Thus, the current study is, to our knowledge, the first to present normative S-EDE-Q data for adolescents.

Comparing the scores obtained from young-adult women for S-EDE-Q subscales in the present study with those presented in other studies (see Table 3), and with the exception of undergraduate adult women in the U.S. (Luce et al., 2008), who obtained higher

Table 3
Comparison of levels and occurrence of eating attitudes and related forms of behaviour in studies of the EDE-Q in several Western countries

Key behavior	Present study (only adult women)	Villarroel et al. (2011)	Luce et al. (2008)	Mond et al. (2006) ¹	Rø et al., (2010)	Welch et al., (2011)
Sample	University students	University students	College Students	General population	University students	General population
N	304	751	723	5255	671	760
Age	18-21	18-30	18-25	18-42	18-66	18-30
Country	Madrid (Spain)	Barcelona (Spain)	United States	Australia	Norway	Sweden
Scales						
<i>EDE-Q global</i>						
Mean (SD)	1.41 (1.19)	1.30 (1.19)	1.74 (1.30)	1.52 (1.25)	1.42 (1.07)	1.56 (1.27)
Clinical sig.	3.3	4.4	5.6	–	2.5	–
<i>Restraint</i>						
Mean (SD)	1.20 (1.32)	1.29 (1.33)	1.62 (1.54)*	1.30 (1.40)	1.44 (1.21)	1.22 (1.32)
Clinical sig.	6.0	4.7	7.9	–	2.4	–
<i>Eating concern</i>						
Mean (SD)	0.77 (0.93)	0.66 (0.97)	1.11 (1.11)*	0.76 (1.06)	0.63 (0.88)	0.81 (1.13)
Clinical sig.	1.0	2.0	2.2	–	0.6	–
<i>Weight concern</i>						
Mean (SD)	1.65 (1.44)	1.51 (1.41)	1.97 (1.56)	1.79 (1.51)	1.63 (1.36)	1.78 (1.52)
Clinical sig.	10.2	8.2	10.2	11.3	7.0*	–
<i>Shape concern</i>						
Mean (SD)	2.01 (1.56)	1.75 (1.50)	2.27 (1.54)	2.23 (1.65)	2.00 (1.42)	2.40 (1.71)
Clinical sig.	13.3	11.3	14.8	19.4*	10.9	–
DR ^a						
Any	27.1	14.7**	25.6	–	11.3**	–
Regular	6.9	–	8.4	4.7	1.8**	5.8
OBE ^b						
Any	36.3	36.0	21.3**	20.7**	–	–
Regular	20.0	20.1	6.4**	12.1**	–	–
SBE ^c						
Any	20.07	23.0	32.1**	25.9*	–	–
Regular	12.2	6.1**	16.7*	16.4*	–	–
SIV ^d						
Any	4.0	2.8	8.8	4.8	–	–
Regular	2.3	1.7	4.0	2.1	–	–
LAX ^e						
Any	4.0	3.8	8.3*	1.3**	–	–
Regular	3.3	2.4	3.1	0.8*	–	–
DIUR ^f						
Any	5.3	7.5*	6.6	0.3**	–	–
Regular	4.3	6.4	3.6	0.3**	–	–
EX ^g						
Any	30.3	23.7*	30.8	–	–	–
Regular	6.7	–	5.9	7.1	7.0	–

^aDR: Dietary Restraint; ^bOBE: Objective Binge Episodes; ^cSBE: Subjective Binge Episodes; ^dSIV: Self-induced vomiting; ^eLAX: Laxative misuse; ^fDIUR: Diuretic misuse; ^gEX: Excessive exercise

¹Adult women in our study (aged 18 to 21) were only compared to the age-matched sample (18 to 22) in Mond et al (2006)

– not available or different definition of frequency of occurrence over the past 28 days

* $p<.01$; ** $p<.001$ (one-sample t-tests for quantitative scores and binomial tests for dichotomous measures)

Table 3 (continuation)
Comparison of levels and occurrence of eating attitudes and related forms of behaviour in studies of the EDE-Q in several Western countries

Key behavior	Adult male			Adolescent female	
	Present study (only adult male)	Penelo et al. (2012)	Lavender et al. (2010)	Present study (only adolescent female)	Carter et al., (2001)
Sample	University students	University students	College Students	Students	Students
N	125	347	404	612	808
Age	18-21	18-30	18-26	12-17	12-14
Country	Madrid (Spain)	Barcelona (Spain)	United States	Madrid (Spain)	United Kingdom
Scales					
<i>EDE-Q global</i>					
Mean (SD)	0.58 (0.83)	0.61 (0.70)	1.09 (1.00)	1.41 (1.34)	1.6 (1.4)
Clinical sig.	1.7	0.7	1.7	5.0	—
<i>Restraint</i>					
Mean (SD)	0.46 (0.90)	0.66 (0.98)	1.04 (1.19)	1.12 (1.43)	1.4 (1.5)
Clinical sig.	1.7	0.7	2.2	5.9	—
<i>Eating concern</i>					
Mean (SD)	0.33 (0.74)	0.24 (0.53)	0.43 (0.77)	0.84 (1.85)	1.0 (1.0)
Clinical sig.	0.9	0.4	1.0	2.2	—
<i>Weight concern</i>					
Mean (SD)	0.67 (0.96)	0.69 (0.82)	1.29 (1.27)*	1.7 (1.6)	1.8 (1.7)
Clinical sig.	2.6	0.7	3.7	11.8	13
<i>Shape concern</i>					
Mean (SD)	0.88 (1.12)	0.83 (0.98)	1.59 (1.38)*	2.0 (1.8)	2.2 (1.7)
Clinical sig.	2.6	1.1	7.7*	19.2	20
DR ^a					
Any	11.1	9.3	24.0**	25.3	—
Regular	3.4	—	—	7.2	—
OBE ^b					
Any	35.7	43.1	25.0**	25.3	—
Regular	19.6	19.0	—	17.4	8**
SBE ^c					
Any	7.8	8.6	—	21.5	—
Regular	4.3	2.6	—	14.2	—
SIV ^d					
Any	0.9	0.4	3.2	4.7	—
Regular	0.9	0.0	—	2.9	—
LAX ^e					
Any	0.0	0.7	2.7*	3.1	—
Regular	0.0	0.4	—	2.0	—
DIUR ^f					
Any	0.0	1.9	—	3.1	—
Regular	0.0	1.9	—	2.8	—
EX ^g					
Any	45.6	36.4*	31.4*	44.0	—
Regular	9.7	—	—	10.5	—

^a DR: Dietary Restraint; ^b OBE: Objective Binge Episodes; ^c SBE: Subjective Binge Episodes; ^d SIV: Self-induced vomiting; ^e LAX: Laxative misuse; ^f DIUR: Diuretic misuse; ^g EX: Excessive exercise
— not available or different definition of frequency of occurrence over the past 28 days
* p<.01; ** p<.001 (one-sample t-tests for quantitative scores and binomial tests for dichotomous measures)

scores for Restraint and Eating Concern, no significant differences have been found. Similarly, there were no significant differences when comparing the scores of adolescent women in our study with those of adolescent female samples in foreign studies (Carter et al., 2001). Normative values from young adult men in our study were strikingly similar to those found in Barcelona (Penelo et al., 2012), and lower than the American men's scores reported by Lavender et al., (2010).

Comparing key ED behavior between undergraduate women in the present study with that of young adult women in other studies (Luce et al., 2008; Mond et al., 2006; Rø et al., 2010; Villarroel et al., 2011; Welch et al., 2011), the percentages, with some

exceptions, are similar (see Table 3 for a summary). With regard to binge eating, the percentages of OBEs in this study are greater than those reported in foreign studies (i.e., Luce et al., 2008; Mond et al., 2006) and strikingly similar to those reported in Barcelona (Villarroel et al., 2011). The percentages reporting SBEs in our study are lower than those presented by foreign studies (Luce et al., 2008; Mond et al., 2006). For compensatory weight control strategies, the percentages reporting regular dietary restraint were similar to those reported by American women (Luce et al., 2008) and greater than those reported in other studies (Rø et al., 2010; Villarroel et al., 2011). The percentages for regular laxative and diuretic misuse in our study were similar to those reported by

women in Barcelona (Villarroel et al., 2011) and the U.S. (Luce et al., 2008) and greater than those reported by the Australian age-matched sample in Mond et al., (2006). With regard to young men, the proportion of binge episodes and compensatory weight control strategies in the present study was similar to that reported by undergraduate men in Barcelona (Penelo et al., 2012) and lower than that reported by American men (Lavender et al., 2010).

The similarities and differences between the current Spanish sample and the Catalanian (Penelo et al., 2012; Villarroel et al., 2011) and foreign samples (Carter et al., 2001; Lavender et al., 2010; Luce et al., 2008; Mond et al., 2006; Rø et al., 2010; Welch et al., 2011) are not totally surprising, since the behavioral ED features fluctuate between individuals and between different samples (Crandall, 1998).

The lower scores obtained by undergraduate men and women in our study compared respectively to those of American undergraduate men (Lavender et al., 2010) and women (Luce et al., 2008) in terms of ED attitudinal and behavior measures [with the exception of OBE episodes among American women], could be explained by the cross-cultural differences between Spain and the United States, the latter being a country that attaches extreme importance to physical appearance.

The greater proportion of reported laxative and diuretic misuse among undergraduate women in our study, and the Catalanian (Villarroel et al., 2011) and American normative studies (Luce et al., 2008) compared to the Australian study (Mond et al., 2006), could be explained by the fact that the former studies were carried out with undergraduate women, whereas the Australian sample, although similar in age to the other studies, was a community sample and not necessarily comprised of undergraduate women. Due to the high prevalence of shape and appearance concerns among undergraduate women and the fact that peer modeling of abnormal eating habits may be related to the onset of binge eating and purging behavior (Stice, 1998), compensatory behavior is likely to be shaped by peers during community meals within university dining facilities or residences, and thus, may be more normative among undergraduate than among women in the wider community.

Also of interest is the high proportion of adolescent and young adult women concerned about their weight and shape. A substantial

proportion of adolescent women scored in the clinically significant range on Shape Concern and Weight Concern. Also a considerable proportion of young adult women in the current study scored in the clinically significant range for Shape Concern and Weight Concern. The percentages are comparable to those reported in other normative Spanish and foreign studies using the same cut-off point (see Table 3). The proportion of adolescent and young adult men scoring in the clinically significant range in the current study was markedly smaller than the proportion of women of the same age, which is in line with the well-known greater prevalence of ED symptomatology among women.

Our results, as well as those of national (Villarroel et al., 2011) and foreign countries (Carter et al., 2001; Luce et al., 2008; Mond et al., 2006; Rø et al., 2010; Welch et al., 2011) suggest the need for prevention and early intervention among the adolescent and young adult populations, especially among women.

A possible limitation of the study is that the information concerning the young adult undergraduate population may be not generalizable to young adults from the community who were not enrolled at university or college level. A second possible limitation is that information regarding the ethnic diversity of the sample was not collected. As a result, the extent to which this sample represents diverse ethnic groups from the community is unknown. Some of the strengths of this study are the large sample used, the relatively wide age range, the participation of both sexes and the number and variety of randomly chosen centers that participated in our study, all of which contribute to the representativeness of our sample. Another strength of our study is that data was collected in situ, which guaranteed a very high response rate. Data was collected from 97.5% of potential participants. Nonetheless, we should consider the possibility that our figures might underestimate the true prevalence and severity of ED features among the adolescent and young adult population, due to the tendency for denial and concealment of ED pathology by the affected subjects.

In conclusion, this study presents normative S-EDE-Q data for adolescent and young adult men and women in a Spanish sample. We anticipate that this information will be useful for researchers and clinicians who employ the S-EDE-Q for epidemiological, diagnostic, preventive and intervening purposes with Spanish speaking adolescent and young adult populations.

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