

## Original Research Article

# Cross-cultural determinants of pre-adolescent self-esteem and body image

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## ABSTRACT

**Background:** The general framework of this research is that the sociocultural context and socio-economic conditions in different countries representing the macro-system of the transactional model of health, with varying degrees of cultural and linguistic familiarity and contact history. Culturally bound definitions of what is desirable and attractive play an important role in body image formation.

**Methods:** The aim of this cross-cultural study was to evaluate the different effects of general self-esteem, eating attitudes and behaviors, and the subjective perception of body image in two representative samplings of urban pre-adolescents (9-12 years old). All the participants were given the following tests: LAWSEQ, ChEAT-26, CFD, and BEStudy.

**Results:** The multiple linear regression analysis showed the relative contribution of each independent variable: the LAWSEQ score explained 12.8% of the variance of the BES score, followed by the BMI (9.3%), the ChEAT-26 score (9.1%), and the CFD (7.8%). The results showed a differential profile between the two samplings.

**Conclusions:** General self-esteem was the strongest predictive variable associated with higher levels of body esteem, while habits and behaviors related to worry about food and the choice of a thinner body image ideal were predictive of lower body esteem, regardless of the nationality, sex, or age of the participants.

**Keywords:** Body ideals, Preadolescents, Self-esteem, Eating disorders

## INTRODUCTION

Culturally bound definitions of what is desirable and attractive, play an important role in subject's body image formation, as an example of this is the observation that Western society places a high value upon appearance, so self-esteem is enhanced for those who are judged attractive and is challenged for those who are deemed unattractive. Cultural factors related to globalization that contribute to eating disorders, such as thin body ideals,

exposure to transnational media, social transition, and modernization, have been found to be compelling in the cross-cultural data.<sup>1</sup>

Body image however, is much more than an individual's physical appearance, attractiveness, and beauty. It is the mental representation that individuals have of themselves and it actively influences behavior, self-esteem, psychopathology, and a person's ideal body shape.<sup>2</sup> Results from studies dealing with regarding dietary behavior disturbances showed that social, cultural, and

psychological characteristics play a more important role than used to be thought.<sup>3</sup>

In the past, the research was addressed to study body image dissatisfaction and preoccupation with weight by measuring the discrepancy between current and ideal self.<sup>4</sup> Furthermore, body image may be affected and partly determined by cultural beliefs and values regarding beauty and attractiveness.<sup>5</sup> Early research pointed out that rates of body image and eating concerns among children and adolescents are thought to be similar in Western South Europe (Spain, Italy, France), and the United States, Canada, or Australia. In several of these contexts, the age for the onset of body image concern appears to be decreasing, although the modal ages of onset continue to occur around the transitions into and out of adolescence. In this context, culturally bound definitions of what is desirable and attractive play an important role in body image formation.<sup>6</sup> Regarding age, by adolescence, girls in particular are more concerned with their appearance than boys, and they also perceive themselves to be less attractive than boys do. In previous studies,<sup>7</sup> girls who perceived themselves to be less attractive had lower self-esteem scores than did girls who were more satisfied with their appearance, and a positive relationship between dieting behavior and disturbed psychological functioning has been proven.

Recent studies suggest that body image dissatisfaction has become increasingly prevalent among the pre-adolescent population over recent years.<sup>7</sup> Several studies focus on weight concerns, body dissatisfaction, and the ideal body-size beliefs found among children. It has been reported that children as young as 5 and 6 years old prefer body shapes thinner than their own. It is of great importance that children, as they grow and develop, maintain a positive body image. Unfortunately, many children as young as 11 and even younger demonstrate body image problems.<sup>8</sup> It is becoming usual to find that 40% to 50% of elementary school children (6-12 years old) are dissatisfied with some aspect of their body and shape.<sup>9</sup>

Moreover, in preadolescents, an important factor related to self-esteem and body image is the transition into middle school (at the age of 12 in Mexico and in Spain) meaning the transition from childhood to adolescence. Once at middle school children, among other contextual changes, encounter larger, more impersonal school contexts and they experience a new level of personal autonomy; they become much more independent of parents.<sup>10</sup> As a result, this transition has been described as a potential turning point in development, that is, a period characterized by significant behavioral and developmental change regardless the onset of pubertal body changes. Overall, this contextual transition are key to identification of determining factors influencing body dissatisfaction and low self-esteem in adolescents.<sup>11</sup>

The aim of this study was to assess differences on eating related factors among two countries representatives of different cultural and economical environments, one closer to US culture as it is Mexico and another representative of a South Mediterranean cultural niche. To reach these objectives we analyzed the differential effect of general self-esteem, eating attitudes and behaviors, and the subjective perception of body image in two representative samplings of pre-adolescents (9-12 years old) of urban origin and similar socio-economic status from Mexico City and a Spanish City.

## METHODS

An observational, cross-sectional, analytical and cross-cultural study.

### Measures

Age-standardized body mass index (BMI). Measurements of height and weight were taken by research staff and used to calculate BMI values ( $\text{kg}/\text{m}^2$ ). Body height was measured in bare feet with a tape fixed on a vertical wall, and taken to the nearest 0.1 cm during physical education classes. Moreover, body weight was measured with light clothing to the nearest 0.1 kg using an electronic scale. Each participant was measured once by trained teachers or researchers using validated equipment, following a modified protocol.<sup>12</sup> In order to place the children's BMI levels within normative context, we converted the BMI scores into age standardized BMI scores (z-BMI) using nationally observed gender-specific means and standard deviations from International Obesity Task Force (IOTF) standards and World Health Organization (WHO) thinness cutoffs.

The Body Esteem Scale (BES) is a 24-item self-reporting instrument that uses obligatory yes-or-no responses in order to assess global body esteem in children.<sup>13</sup> Higher total scores indicate higher body esteem. The BES had high internal reliability (Cronbach's  $\alpha=0.90$ ).

The children's version of the Eating Attitudes Test (ChEAT) is a 26-item questionnaire designed to measure eating attitudes and behaviors in children aged 8 through 13.<sup>14</sup> The ChEAT has high test-retest reliability ( $r=0.81$ ) and good internal reliability, ranging from 0.76 (14) to 0.87.<sup>15</sup> With our sample the ChEAT had good internal reliability (Cronbach's  $\alpha=0.78$ ).

Collins' Figure Drawings (CFD).<sup>4</sup> The CFD is a pictorial instrument consisting of seven pre-adolescent body figures ranging from very thin (scored 1) to obese (scored 7). This instrument is the children's version of body drawings for adults. Seven male and female figures of children were created to illustrate body weights ranging from thin to obese. Participants used the CFD same-gender child figure to make self, ideal-self, and social-self-selections. The CFD score was determined by subtracting the value of the self-selection from the value

of the ideal-self-selection. Negative scores indicate desires for thinner body shapes, whereas positive scores indicate desires for heavier body shapes.

Lawrence Self-Esteem Questionnaire (LAWSEQ) is a 12-item validated instrument used to measure children's self-esteem.<sup>16,17</sup> It contains several items that assess how young people perceive the behavior of others with respect to them and how they believe they are seen by others, from the importance and influence these perceptions have on self-esteem.

### Participants

The Mexican participants consisted of 600 children and 457 in Spain were of children. In both cases the sample was determined by an expected proportion of 50%, a margin of error of 4%, and a level of reliability of 95%. In both samples, the selection of the participants was done by means of two-stage sampling, with probabilities proportional to the sizes of the first-stage units (schools). The sampling framework for Mexico was 542,822 schoolchildren from Mexico City, both boys and girls, ranging in age from 9 to 12 years old (sample recruited between February 2015-June 2016).<sup>18</sup> The Spanish reference population was of 38,291 children from Gerona, Spain, also between the ages of 9 and 12 (recruited between September 2015 - May 2016).<sup>19</sup> The sampling method guaranteed equal proportion of both genders 48.9% boys in Mexico and 55.1% in Spain ( $X^2=2.390$ ;  $df=1$ ;  $p=0.087$ ). All participations were voluntary and ethical approval to conduct the study was obtained from the Universities Research Ethics Committees of the country coordinating centers. School principals were sent letters of invitation with information about the study. Parents were then sent information sheets and consent forms. Only children who had returned their signed consent forms were invited to participate in the study. There was no incentive for participation for the schools or participant.

### Data analysis

Descriptive statistics were used to report the characteristics of the study participants by means of absolute and relative frequencies for qualitative variables and by means of central tendency and dispersion measures for quantitative variables. A Multivariate Analysis of Variance (MANOVA) including LAWSEQ, ChEAT-26, BES, CFD as dependent variables between together with, sex, and interaction. When there was a significant difference between the two groups, the Cohen's (d) was calculated to determine the Standardized Effect Size (SES) of the difference among countries and sex. In order to check the distribution of the BMI in the two populations, a bivariate analysis of the BMI categories stratified by gender and country was performed using the Pearson  $\chi^2$  test.

The effect of country on subject's global body esteem as measured by BES, was assessed taking into account the

age, gender, self-esteem, eating attitudes, self-image, ideal and social body shape, and the BMI, by a multivariate approach. Specifically, we fitted a linear multivariate regression model by using the BES score as a dependent variable and the age, gender, LAWSEQ, ChEAT-26, and CFD scores, and the BMI as independent variables. We used the step wise enter method to determine the contribution of each variable. The contribution of each independent variable to the total variance was calculated using the beta coefficient product by Pearson's correlation coefficient for each independent variable with the dependent variable.

Results are expressed as absolute numbers and percentages, means, standard deviation (SD), and 95% confidence interval (95% CI). When contrasting hypotheses, a statistical significance of 0.05 was used. Data processing and analysis was performed using the SPSS statistical program version 20 for Windows.

### RESULTS

The overall sample consisted of 1,055 participants; the mean age was 10.3 years ( $SD=1.2$ ;  $range=8-12$ ) and 47.9% were girls. The mean score on the BES was 16.8 points ( $SD=4.7$ ;  $range=1-23$ ); on the LAWSEQ it was 15.3 points ( $SD=4.4$ ;  $range=1-23$ ); on the ChEAT-26 it was 13.8 points ( $SD=8.4$ ;  $range=0-48$ ); on the CFD Current-Ideal it was 0.4 points ( $SD=1.0$ ;  $range=-3.5-5.0$ ); and on the CFD Current-Social it was 0.02 points ( $SD=0.7$ ;  $range=-3.5-3.0$ ).

The mean BMI was 19.5  $kg/m^2$  ( $SD=3.9$ ;  $range=12.2-38.2$ ) for the overall sample, and we detect statistically significant differences between the two populations. Specifically, the Mexican participants had a higher BMI than the Spanish participants (20.36 [ $SD=4.13$ ] vs. 18.55 [ $SD=3.41$ ]) (Student's t test=7.7; degrees of freedom [ $df$ ]=1.053;  $p<0.001$ ; Cohen's  $d=0.48$ ). In the overall sample we found that 2.5% ( $n=14$ ) of the boys and 3.2% ( $n=16$ ) of the girls were underweight; 39.5% ( $n=418$ ) of the boys and 37.5% of the girls ( $n=400$ ) were normal-weight; and 21.6% ( $n=119$ ) of the boys and 17.8% ( $n=90$ ) of the girls were overweight/obese. The distribution of the BMI according to the underweight, normal-weight and overweight/obese categories depending on country of origin showed higher frequency of underweight and overweight/obese individuals in the Mexican population (4.3% vs. 0.9% and 31.2% vs. 4.8%;  $\chi^2=131.8$ ;  $df=2$ ;  $p<0.001$ ). Regarding country effect, statistically significant differences were found the factors in general self-esteem, risk eating behavior, body esteem, and BMI; specifically Spanish sample scored higher in general self-esteem ( $ME=16.2$ ;  $SD=4.48$ ) than the Mexican one ( $ME=14.27$ ;  $SD=4.35$ ), and on body esteem Spanish sample ( $ME=18.15$ ;  $SD=4.11$ ) than in the Mexican one ( $ME=15.95$ ;  $SD=5$ ), while Mexicans showed higher values on risky eating attitudes and behaviors ( $ME=16.27$ ;  $SD=8.82$ ) than in the Spanish one ( $ME=10.64$ ;  $SD=6.83$ ) and ideal image Mexican sample ( $ME=0.55$ ;  $SD=1.06$ ) than in the Spanish one ( $ME=0.17$ ;

SD=0.88). Otherwise, Mexican and Spanish sample were similar in terms of current and social image, ((ME=0.002; SD=0.83) and (ME=0.05; SD=0.64), respectively).

Spanish girls scoring significantly lower (ME=9.84; SD=6.46) than Spanish boys (ME=11.29; SD=7) and on the contrary Mexican boys (ME=15.09; SD=8.66) lower than Mexican girls (ME=16.64; SD=8.97) (Table 1).

Interaction between country and gender was significant for the risk eating behavior (F=4.793; p=0.029), where

**Table 1: Between subjects effects of the independents variables and the interaction of country by sex.**

Dependent variables		Between subjects effects										Interaction contry*sex		
		Mexico M (SD)	IC 95%	Spain M (SD)	IC 95%	Country			Sex			F	pvalue	d
Lawseq	boys	15.297 (4.296)	14.80-15.76	16.482 (4.171)	15.93-17.02	27.656	0.000	0.33	10.43	0.001	0.22	0.865	0.352	0.22
	girls	14.159 (4.336)	13.66-14.65	15.852 (4.835)	15.25-16.45									
ChEAT-26	boys	15.906 (8.666)	14.99-16.81	11.298 (7.076)	10.30-12.29	130.089	0.000	0.7	0.508	0.476	0.01	4.793	0.029	0.01
	girls	16.644 (8.977)	15.73-17.55	9.848 (6.461)	8.74-10.94									
BES	boys	16.327 (4.797)	15.80-16.85	18.366 (3.768)	17.79-18.94	56.603	0.000	0.48	4.54	0.033	0.16	0.224	0.636	0.16
	girls	15.574 (5.191)	15.05-16.09	17.887 (4.498)	17.25-18.52									
CFD real-ideal	boys	0.473 (.979)	0.36-0.58	0.13 (.947)	0.00-0.25	38.694	0.000	0.39	4.527	0.034	0.16	0.435	0.510	0.16
	girls	.645 (1.132)	0.53-0.75	0.221 (0.809)	0.08-0.35									
CFD real-Social	boys	.005 (0.855)	-0.08-0.09	0.067 (0.639)	-0.02-0.16	1.319	0.251	0.07	0.097	0.756	0.02	0.029	0.865	0.02
	girls	-0.001 (0.821)	-0.08-0.08	0.045 (0.649)	-0.05-0.15									

All the necessary requirements to apply the regression analysis were met on the score of the BES. The Levene test for the residuals of each BES quartile score did not reject the assumption of homogeneity of the variances and the result of the application of the Kolmogorov-Smirnov test showed non-significant p values. VIF values were not above 1.850 for any variable. The presence of extreme values was not seen, as the highest Cook's

distance was of 0.001. The Adjusted regression model explained a 0.44 of the variability, being sex and country excluded due to non-significant contribution. The final model included (see Table 2) LAWSEQ score explained 12.8% of the variance of the BES score, followed by the BMI with 9.3%, the ChEAT-26 score with 9.2%, and the CFD current-ideal score with 7.8%. Age and CFD current-social score contributed poorly to the BES variance.

**Table 2: Multiple linear regression of age, sex, country, LAWSEQ, cheat-26, BMI, and CFD on BES scores.**

Variable	β	SE(β)	t	Sdβ	ΔR <sup>2</sup>
Constant	26.340	1.319	19.977**	--	0.44 <sup>†</sup>
Age	-0.682	0.098	-6.963**	-0.171	0.039
Sex	-0.300	0.223	-1.347	-0.031	0.001
Country	0.022	0.240	.092	0.002	0.000
LAWSEQ	0.327	0.027	12.217**	0.306	0.128
ChEAT-26	-0.122	0.015	-8.146**	-0.217	0.092
CFD Current-Ideal	-0.882	0.139	-6.365**	-0.187	0.078
CFD Current-Social	0.284	0.151	1.878*	0.045	0.008
BMI	-0.254	0.038	-6.708**	-0.210	0.093

**DISCUSSION**

Results showed differences on factors involved on eating behavior across countries specifically on body esteem

and general self-esteem and differences on risk eating attitudes. Furthermore, we found that body esteem can be predicted by general self-esteem, body mass index, risk

eating behavior and discrepancy current image vs. ideal image factors regardless country and sex.

The results show that the group of Mexican boys and girls as a whole manifest lower body esteem and general self-esteem than their counterparts in the Spanish sample. Also, the Mexican children register higher indicators of risky eating attitudes and behaviors, associated with TCA (ChEAT) than the Spanish sample as a whole. The Mexican children also prefer thinner bodies as an ideal body image (CFD current-ideal) than the children in the Spanish sample. Statistically significant differences were not observed in the children's perception of their current image and how they think they are perceived by others (CFD current-social). Overall, these findings coincide with those registered by other cross-cultural (Mexico-Spain) research, which shows greater dissatisfaction with body image and a thinner ideal body image in samples of Mexican children and adolescents than in Spanish ones.<sup>20-22</sup>

Regarding the poor predictive contribution of age, previous research has indicated no clear trends in the relationship between age and body dissatisfaction, thin-ideal internalization, or dietary restraint.<sup>23-25</sup>

The mean BMI scores were significantly higher in the sample of the Mexican children than in that of the Spanish ones. The proportion of children with underweight in the Mexican sample was 4.3%, compared to 0.9% in the Spanish sample. As regards the distribution of cases of overweight/obesity in the two samples, results showed that 31.2% of all the children in the Mexican sample were overweight/obese, in contrast to 4.2% of those in the Spanish sample. These data coincide with various studies carried out in Mexico that reflect a very high prevalence of overweight/obese children (35%, according to the Encuesta de Salud y Nutrición, whereas the results of the Spanish sample give a figure below the values of prevalence of overweight/obese children in the general population (31%, according to the Aladino study.<sup>26,27</sup> Obesity and overweight are highly prevalent health problems among school age children in both Mexico and Spain. In Mexico the conditions affect mainly boys and are associated with socio-economic level, age, and degree of schooling of the mother. In Spain, overweight and obesity among children also mainly affect boys and are associated with low socio-economic levels, lack of exercise, and poor eating habits.

Multiple regression analysis showed that general self-esteem was the predictive variable most closely associated with higher levels of body esteem. The findings are also consistent with the view that both self-esteem and body esteem may be closely related and interdependent dimensions of the same construct.<sup>28</sup> As was to be expected, high self-esteem is associated with positive body esteem, whereas lower body esteem leads to attitudes and behaviors related to TCA and greater

BMI.<sup>5</sup> Self-esteem is regarded as an evaluative aspect of one's self. Individuals experience high self-esteem when there is little discrepancy between the ideal and the perceived real self. Low self-esteem arises when the discrepancy is great. Several authors have stressed the importance of low self-esteem in the development of eating disorders, whereas a positive self-esteem has been pointed out as protective factor not only for abnormal eating behaviors but also for eating disorders.<sup>29-31</sup> In addition, several cross-sectional and longitudinal studies have linked low self-esteem (assessed as an overall degree of self-disapproval) with current and/or future risky eating attitudes and behaviors; for instance, it has been significantly associated with disordered eating.<sup>32</sup> Other studies have also shown that obesity and low self-esteem are connected. There is evidence that obese children with greater body dissatisfaction also have lower self-esteem.<sup>33</sup> Although it is generally supposed that low self-esteem is the result of overweight/obesity, there is other evidence pointing in the opposite direction, namely, that low self-esteem is an antecedent to obesity and a risk factor for weight increase.<sup>34</sup> Body dissatisfaction and low body esteem have been identified as important mediating factors with regard to self-esteem and obesity.

The results also showed that a greater discrepancy between current and ideal body perception (CFD current-ideal) is predictive of lower body esteem. Some authors have proposed that thin-ideal internalization leads to body dissatisfaction and thence to an increased risk of disordered eating attitudes via two distinct "pathways": dietary restraint and depression. Elevated adiposity also acts upon this process, contributing to initial variance in both thin-ideal internalization and body dissatisfaction.<sup>35</sup> In this sense, previous authors have hypothesized that early exposure to an obesogenic environment in which extreme thinness is highly valued may result in the rapid emergence of thin-ideal internalization and body dissatisfaction in childhood, particularly among overweight girls.<sup>36</sup> Also, compared with individuals who place low cognitive importance on appearance, those who place high cognitive importance on appearance often perceive a large discrepancy between their actual and ideal images and evaluate their bodies more negatively.<sup>37</sup>

In spite of the differences between the study variables in the two samples, country of origin did not prove predicative of body esteem. A possible explanation of this fact is that the sociocultural differences between Mexico and Spain establish a difference of degree between the study variables, but not a qualitative difference that points to differing psychological factors connected with body-ideal internalization than can be associated with the cultural frame of reference. As several studies have suggested, this may be due to the homogenization of esthetic models and ideals between the two sexes. The differences in this case are not of degree, but rather qualitative, determined basically by different male/female models of reference. Whereas women's and girls' preoccupations tend to be about

weight and becoming thinner, men's and boys' preoccupations tend to be about becoming lean and muscular.<sup>38</sup> These tendencies are already present in pre-school, with girls being more likely to worry about their "fat tummy" and boys about their muscularity.<sup>39</sup>

In summary, greater general self-esteem would seem to act as a protective factor of body esteem, while restrictive eating attitudes and behaviors, greater BMI, and the desire to have an ideal body thinner than one's own would seem to be risk factors. This correlation had already been indicated in other studies with pre-teens.<sup>22,39</sup>

The results obtained support that among the range of factors influencing such choices, self-esteem may play a key role. Strategies to promote social and emotional aspects of learning, including the promotion of self-esteem, are central to a number of recent policy initiatives.<sup>40</sup>

One limitation of this study is its cross-sectional design. A longitudinal design may be more adequate for identifying the changes in the study variables. The geographic provenance of the samples also constitutes a limitation when generalizing the results, especially given the different ethnic dynamics of the Mexican sample framework, which were not reflected in this study because it was matched to the socio-economic and cultural level of the Spanish sample. Nor were important variables such as family environment, peer relationships, and different esthetic models of social influence between the two countries taken into account.

However, we have demonstrated in a large sample that general esteem is independent of country and sex differences, as that body esteem and general self-esteem are its more relevant contributors. This results support the relevance self-esteem factors related to eating disorders among pre-adolescent population that can be useful to health systems and regulatory bodies when planning global preventive campaigns of eating disorders across countries.

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