

Self-esteem and its association with depression in Chinese, Italian, and Costa Rican
adolescents: A cross-cultural study

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Abstract

This study investigated the factor structure of the Rosenberg Self-Esteem Scale (RSES), the differences in mean level of self-esteem and its association with depression in adolescents in three different cultures. The RSES and the Children's Depression Inventory were administered to Chinese ($N = 350$), Italian ($N = 352$), and Costa Rican ($N = 343$) adolescents. Confirmatory factor analyses supported the two-factor model of the RSES and it was demonstrated to be invariant across cultures using multi-group confirmatory factor analyses. MANOVA results indicated that Costa Rican adolescents scored higher on positive and negative self-esteem than their Chinese and Italian counterparts. Furthermore, both positive and negative self-esteem was related to depression across cultures. In conclusion, there are both cultural differences and similarities in self-esteem.

Keywords: self-esteem; depression; adolescent; individualism-collectivism.

Introduction

Self-esteem refers to one's general sense of worthiness (Rosenberg, 1965). People in different cultures have different perceptions about themselves (Markus & Kitayama, 1991), and therefore cross-cultural perspective is an important approach to investigate self-esteem. To date, some debates have not been completely solved. First, the Rosenberg Self-Esteem Scale (RSES), a popular instrument to assess self-esteem, is conceptualized as unidimensional (Schmitt & Allik, 2005), but some studies argue that it consists of two distinct, yet related, components (Greenberger, Chen, Dmitrieva, & Farruggia, 2003). Second, some studies have found that people in individualistic cultures have higher self-esteem than in collectivistic cultures (Heine, Lehman, Markus, & Kitayama, 1999), while others have not supported this view (Schmitt & Allik, 2005). Last, some scholars posited that self-esteem plays a role in numerous outcomes (e.g., depression) only in individualistic cultures, because self-esteem is more emphasized in individualistic than in collectivistic cultures (Heine et al., 1999). However, others contended that the function of self-esteem is equally important in individualistic and collectivistic cultures (Cai, Wu, and Brown, 2009).

To our knowledge, there is scant research comparing the factor structure of the RSES, the differences in mean level of self-esteem, and its relationship with depression among East Asian, European, and Latin American adolescents. For example, Farruggia, Chen, Greenberger, Dmitrieva, and Macek's (2004) research investigated the factor structure of the RSES, the differences in mean level of self-esteem, and the relationship between self-esteem and depression in Chinese, Korean, U.S., and Czech adolescents, but it did not include a Latin American sample. Schmitt and Allik (2005) investigated the factor structure of the

RSES and the differences in mean level of self-esteem in 53 countries, but they did not focus on adolescents and did not examine its relationship with depression. To fill these gaps in the literature, the present study investigated the factor structure of the RSES, the differences in mean level of self-esteem, and the relationship between self-esteem and depression among Chinese, Italian, and Costa Rican adolescents.

Individualism and collectivism

Individualism-collectivism is an important framework to investigate cultural similarities and differences. At first, individualism-collectivism is viewed as one bipolar dimension (Hofstede, 1980). However, this classification is criticized for its oversimplification, and some studies proposed more complex models (Triandis & Gelfand, 1998; Freeman & Bordia, 2001). Triandis et al. (1998) considered individualism and collectivism as two general orthogonal dimensions and they further divided these two dimensions into four categories (i.e., vertical individualism, vertical collectivism, horizontal individualism, and horizontal collectivism) by including whether people emphasize equality or hierarchy, a contention similar to Hofstede's power distance (defined as the extent to which people within a country accept that power is distributed equally, geert-hofstede.com) although there are some conceptual differences (Shavitt, Torelli, & Riemer, 2010). Triandis and Gelfand (1998) supported that people could be both collectivist and individualist at the same time. Freeman and Bordia (2001) stated that this does not mean people are collectivistic in one context and individualistic in another, but that "people may endorse both individualist and collectivist attitude statement within the same context" (p. 107). On this basis, they found that

individualism and collectivism was a general bipolar higher-order construct that included individualism and collectivism within different contexts (i.e., individualism-collectivism within family, individualism-collectivism within peers, individualism-collectivism within nation, and individualism-collectivism within school).

Although there is not clear definition, based on the scores of individualism and power distance (<http://geert-hofstede.com>), China can be roughly viewed as a vertical collectivistic culture (low individualism and high power distance), and Costa Rica can be roughly seen as a horizontal collectivistic culture (low individualism and low power distance). Italy is a representative of individualistic country but it is in the middle of horizontal and vertical dimension (high individualism and medium power distance). According to Triandis and Gelfand (1998), in vertical individualistic cultural contexts, people like to become distinguished and acquire status through competition with others; in horizontal individualistic cultural contexts, people focus on expressing their uniqueness and building one's ability to be successfully self-reliant and see themselves as equal to others in status; in vertical collectivistic cultural contexts, people highlight the integrity of the in-group and are willing to sacrifice their own personal goals to comply with authorities; in horizontal collectivistic cultural contexts, people tend to view themselves as being similar to others and emphasize sociability and interdependence, but do not easily submit to authority.

Factor structure of the RSES

Numerous studies reported that the RSES contained two factors, with five positive-wording items indicating positive self-esteem and five negative-wording items reflecting

negative self-esteem (Farruggia et al., 2004; Greenberger et al., 2003). However, some researchers found that the RSES was unidimensional (Corwyn, 2000; Schmitt & Allik, 2005), concluding that the two-factor structure should be due to method effects (Marsh, Scalas, & Nagengast, 2010). For example, Carmines and Zeller considered that if the two factors (i.e., positive and negative self-esteem) were truly different, then one factor should be related to a certain criteria in a different way (e.g., magnitude, direction) in comparison to the other factor, but no evidence supported this claim in their study (c.f. Marsh et al., 2010).

Nonetheless, both the one-factor and the two-factor models are demonstrated to be culturally equivalent (Farruggia et al., 2004; Schmitt & Allik, 2005). Schmitt and Allik (2005) found that most items of the RSES were loaded significantly on a single factor across 53 countries, except that item 8 was not significant in some collectivistic countries (e.g., China). Farruggia et al.'s (2004) study revealed that the two-factor model of RSES was equivalent across American, Chinese, Czech, and Korean adolescents after deleting item 8. However, to our knowledge, to date there is no information about the factor structure and equivalence of the RSES in Costa Rican samples.

Mean level of self-esteem

It is consistently found that East Asian people report lower self-esteem than Westerners (Cai et al., 2007; Farruggia et al., 2004). Although there is no direct evidence comparing the mean level of self-esteem in Chinese, Italian, and Costa Rican adolescents, indirect evidence exists. According to Schmitt and Allik's (2005) study, Chinese sample's mean score on the RSES was 27.54, which was lower than in the Italian sample ($M = 30.56$). Although this

study did not include Costa Rican sample, other Hispanic participants' scores ranged from 31.24 (Argentina and Bolivia) to 33.01 (Peru), suggesting that Chinese adolescents' self-esteem is very likely to be lower than their Italian and Hispanic counterparts. Therefore, it is reasonable to expect that Chinese adolescents would score lower on the RSES than Italian and Costa Rican adolescents.

Relationships between self-esteem and depression

Depression is related to self-esteem (Sowislo & Orth, 2013). Farruggia et al. (2004) considered that the dimension of the RSES should be taken into account when examining the relationship between self-esteem and depression. This is because compared to Western cultures, self-enhancement (e.g., expressing positive views about the self) seems to be less appropriate than self-criticism (e.g., admitting to faults) in some Asian countries (e.g., China). As a result, the relation of the two dimensions to other outcomes may differ across cultures. Previous studies found that both a positive and a negative self-esteem were negatively related to depression in Italian adolescents (Delvecchio, 2013), but only a negative self-esteem was related to depression in Chinese adolescents (Farruggia et al., 2004). However, we did not find any published study addressing this issue in Costa Rican adolescents.

The present study

This study examined the factor structure of the RSES, differences in mean level of self-esteem, and the relation of self-esteem to depression among Chinese, Italian, and Costa Rican adolescents. The RSES was found to be invariant across individualistic and collectivistic

cultures (Farruggia et al., 2004; Schmitt & Allik, 2005). However, equivalence is not known in Costa Rican samples, because to our knowledge, this topic has never been addressed previously. Because Chinese culture requires people to be modest and not to show off their personal achievements (Cai et al., 2007), we anticipated that Chinese adolescents would show a lower level of self-esteem than their Italian and Costa Rican counterparts. Last, based on previous findings (Cai et al., 2009; Delvecchio, 2013), we assumed that self-esteem would be negatively related to depression in Chinese and Italian samples, but it was not known how depression and self-esteem would be related in the Costa Rican sample.

Method

Participants

The current study included three samples recruited from middle schools and high schools (grade 7 to 11, $M_{\text{grade}} = 8.82$; $SD = 1.46$). Chinese ($N = 350$, 183 boys, 167 girls; $M_{\text{age}} = 14.17$ years, $SD = 1.51$), Italian ($N = 352$, 169 boys, 183 girls; $M_{\text{age}} = 14.17$ years, $SD = 1.74$), and Costa Rican ($N = 343$, 140 boys, 203 girls; $M_{\text{age}} = 14.73$ years, $SD = 1.59$) adolescents were selected in Guangzhou, Milan, and San José, respectively. Participants were recruited in private and public cooperative schools that served mainly middle-class families (absolute SES, Hollingshead 1975), with approximately similar basic quality of life, within urban and suburban school districts. All participants were residents of their respective countries, and the primary languages were Chinese, Italian, and Spanish for Chinese, Italian, and Costa Rican adolescents, respectively. Approximately 93% of the families who received

the leaflet agreed to participate. Those who declined indicated reasons such as lack of interest and concerns about sharing personal information.

Measures

Self-esteem

The Rosenberg Self-Esteem Scale (RSES, Rosenberg, 1965) was used. Chinese, Italian, and Costa Rican adolescents answered the Chinese (Wang, Wang, & Ma, 1999), Italian (Prezza, Trombaccia, & Armento, 1997), and Spanish (Martín-Albo, Núñez, Navarro, & Grijalvo, 2007) versions of this scale, respectively. This scale consists of ten items rated on a 4-point scale (from “1 = strongly disagree” to “4 = strongly agree”), five of which are negatively worded and the other five items are positively worded. Higher scores indicate higher self-esteem. The RSES had been validated in Chinese (Wang, Wang, & Ma, 2007), Italian (Delvecchio, 2013), and Costa Rican (Prado-Calderón, 2011) samples. In addition, the RSES scores demonstrated good internal consistency reliability and were related to psychopathology, behavioral problems, and well-being. The internal consistency reliability for Chinese, Italian, and Costa Rican adolescents in this study were .84, .81, and .76, respectively.

Depression

Kovacs and Beck’s (1977) Children Depression Inventory (CDI) was used. Chinese, Italian, and Costa Rican samples filled out the Chinese (Wang et al., 2010), Italian (Camuffo, Cerutti, Lucarelli, & Mayer, 1988), and Spanish (Del Barrio, 1993) versions, respectively.

This scale consists of 27 items graded in severity from 0 to 2. A higher score indicates more severe depression. The CDI scores showed good internal consistency reliability and construct validity among Chinese (Wang et al., 2010), Italian (Delvecchio, 2013), and Hispanic (Del Barrio, 1993) adolescents. The internal consistency reliability in this study for Chinese, Italian, and Costa Rican samples was .86, .88, and .85, respectively.

Procedure

This study was part of a large collaboration project between the University of Padua (Italy), Guangzhou University (China), and Catholic University of Costa Rica. It was conducted in compliance with the ethical standards for research outlined in the Ethical Principles of Psychologists and Code of Conduct (American Psychological Association 2010). Approval by the Ethical Committee for Psychological Research was obtained from the universities. Participation in the study was solicited via leaflets. School approval and parents' signed consent were obtained before data collection. Adolescents provided their assent and were willing to participate. No incentives were awarded and voluntary participation was emphasized. Participants completed the questionnaires during regular classes and were required to be honest and to refrain from sharing answers with each other. Administrations were conducted by trained postgraduate students who were familiar with all scales and able to offer clarifications if needed. Specific attention was paid to keeping the same administration procedures across cultures. To prevent an order effect, the administration, in the three samples, was counterbalanced so that half of the sample completed the RSES first followed

by the CDI, and vice versa for the other half. Confidentiality was assured by replacing adolescent's personal information with a numeric code.

Data analysis

Data analyses were performed using SPSS 18.0 and LISREL 8.70 with .05 as significance level. First, confirmatory factor analyses were conducted to examine the factor structure of the RSES. A diagonally weighted least squares (DWLS) robust method based on polychoric correlations was used because the observed variables were ordinal, and displayed a certain level of skewness ([.266, .811]), kurtosis ([.053, .980])¹ and non-normality (p Kolmogorov-Smirnov < .05). Root Mean Square Error of Approximation (*RMSEA*) and Comparative Fit Index (*CFI*) served as guidelines to evaluate model fit when discussing the cutoff values for the fit indices. The values of *RMSEA* below .08 and .05 suggest “adequate” and “close” model fit, respectively (Marsh, Hau, & Wen, 2004). *CFI* values over .90 suggest acceptable model fit (Bentler, 1990). Second, multi-group confirmatory factor analyses were conducted to test measurement invariance of the RSES following the steps recommended by van de Schoot et al. (2012). Because chi-square is sensitive to sample size, ΔCFI is recommended to evaluate measurement invariance (e.g., Cheung & Rensvold, 2002). Measurement equivalence should not be rejected if (1) *CFI* would show a decrease of less than .01 and (2) *RMSEA* would be less than .08 and *CFI* over .90 (Cheung & Rensvold, 2002). Third, based on scalar invariance (van de Schoot et al., 2012), MANOVA was performed to compare cultural differences in self-esteem. Eta squared was used to measure effect size, and small,

¹ Numbers of skewness and kurtosis are absolute values.

medium, and large effects for MANOVA were .01, .06, and .14, respectively (Cohen, 1988).

Last, correlation analyses were conducted to investigate relationship between self-esteem and depression.

Results

Factor structure of the RSES

We tested one-factor model with 10 items, two-factor model with 10 items, and two-factor model with 9 items (with item 8 deleted because it was found problematic, Schmitt & Allik, 2005). Results showed that the two-factor model with 10 items showed adequate fit in Chinese and Italian samples, and close fit in Costa Rican sample. In addition, because the one-factor model with 10 items and the two-factor model with 10 items were nested, we tested chi-square difference between these two models. Results showed that the two-factor model was better than the one-factor model across Chinese ($\Delta\chi^2(1) = 167.323, p < .01$), Italian ($\Delta\chi^2(1) = 57.968, p < .01$), and Costa Rican ($\Delta\chi^2(1) = 208.854, p < .01$) samples. Therefore, the two-factor model with 10 items was selected as our final model for subsequent analyses.

[TABLE 1]

Measurement invariance

We performed multi-group confirmatory factor analyses to investigate whether the two-factor model was equivalent across countries. As shown in Table 2, Model 1 showed adequate

fit, indicating that configural invariance was established. We then constrained factor loadings to be invariant (metric invariance) across samples, finding that the value of *RMSEA* was over .08 and ΔCFI was .012 (Model 2a). In this case, partial invariance was performed following van de Schoot et al.'s (2012) recommendation. After scrutinizing the significance and homogeneity of the factor loadings, we found that in the Chinese sample item 8 was negatively correlated to other items corresponding to the negative self-esteem factor, and that the factor loading of item 1 was not significant in Costa Rican sample. Therefore, we first freed item 1 while constraining the others to be equal (Model 2b). The model showed adequate fit and the decrease of *CFI* was less than .01. Nevertheless, we continued to free item 8 (Model 2c) because this item was negatively related to other items that belonged to negative self-esteem. This model showed adequate fit and ΔCFI was .005, and it was better than Model 2b, $\Delta\chi^2(2) = 43.756, p < .01$. Based on Model 2c, scalar invariance (Model 3) was established by constraining thresholds of all the ten items, as the model showed adequate fit and ΔCFI was .002. In sum, the results of multi-group CFA suggested that the factor structure of the RSES was invariant across countries.

[TABLE 2]

Cultural differences in mean level of RSES

MANOVA was performed with raw scores of positive and negative self-esteem as dependent variables and with country as independent variable (Table 3). The Wilk's Lambda value was $F(4, 2082) = 15.85, p < .01, \eta^2 = .030$. Test of between-subject indicated that both

positive ($F(2,1042) = 12.72, p < .01, \eta^2 = .024$) and negative ($F(2,1042) = 28.45, p < .01, \eta^2 = .052$) self-esteem were significantly different across countries. Bonferroni post-hoc revealed that Costa Rican adolescents reported higher positive self-esteem than Chinese and Italian adolescents, whereas the Chinese sample did not differ from the Italian sample. Costa Rican adolescents also had higher negative self-esteem than Italian sample, who in turn reported higher score than did Chinese adolescents.

[TABLE 3]

Correlation between self-esteem and depression

Results of correlational analyses showed that both positive and negative self-esteem were negatively related to depression across countries, and the magnitude of the correlations was medium, ranging from $r = -.41$ to $r = -.64$ (Table 4).

[TABLE 4]

Discussion

We investigated three issues of self-esteem in three different cultures in this study. Our findings indicated that: the two-factor model of the RSES was supported and found to be invariant across cultures; Costa Rican adolescents reported higher positive and negative self-esteem than their Chinese and Italian counterparts. Both positive and negative self-esteem were significantly related to depression across cultures.

As regards to the factor structure of the RSES, the two-factor model was supported but such equivalence was partial, with item 1 (“on the whole, I am satisfied with myself”) and item 8 (“I wish I could have more respect for myself”) differing across countries. Schmitt and Allik’s (2005) found item 8 represented a problematic issue mainly for collectivistic countries. They suggested that “a wish” in item 8 may be misunderstood by Chinese adolescents who may interpret it as a need to gain more positive views of themselves than they already have, rather than a need to increase respect for themselves. The reason why item 1 showed non-significant loading in the Costa Rican sample remains unknown. Because this is the first study concerning the factor structure and equivalence of the RSES in Costa Rican adolescents, further investigation is needed to determine whether similar results would be found.

With respect to the cultural differences in mean level of self-esteem, in contrast with prior findings supporting that people in individualistic cultures have higher self-esteem than in collectivistic cultures (Heine et al., 1999), our results suggested that Costa Rican adolescents showed higher self-esteem than the other two samples. This could be interpreted in two ways. On one hand, Costa Rica, as noted earlier, can be roughly seen as a horizontal, collectivistic culture. Previous studies found that people with horizontal, collectivistic orientation are more likely to show a socially appropriate image that could maintain social relationship (Shavitt, Lalwani, Zhang, & Torelli, 2006), and claiming high self-esteem may be one way to achieve the goal of image management. In contrast, modesty is emphasized in China and thus Chinese participants might not explicitly admit their good qualities (Cai et al., 2009). On the other hand, it is considered that horizontal collectivists are associated more

with benevolence (Cukur, De Guzman, & Carlo, 2004), and a recent study found that benevolence is a source of self-esteem (Kwan, Kuang, & Hui, 2009). This may help explain why Costa Rican adolescents show more self-esteem than their Chinese and Italian counterparts. Although such possibilities need further examination, we think that using a more complicated model of individualism-collectivism (e.g., horizontal and vertical individualism-collectivism) instead of a simple one (e.g., individualism-collectivism) and combining ecological culture with individual psychological culture might help explain this issue more clearly.

Regarding the relation between self-esteem and depression, positive and negative self-esteem were related to depression across cultures, supporting the view that the relation between self-esteem and depression holds both in individualistic and collectivistic cultures although there is difference in mean level of self-esteem (Cai et al., 2009).

This study is not without limitations. Because data were collected in only one city within each country, the generalizability of result is limited. In addition, although a new version of CDI (Kovacs & MHS Staff, 2011) has been developed, this study used the old version because the new one has not yet been validated in Chinese, Italian, and Spanish samples. Further investigation using new version of the scales is warranted. Last, although we consider that different dimensions of individualism-collectivism may be related to one's self-esteem, the current study did not examine this issue directly, and further examination is needed.

Nevertheless, this study bears some contribution to the cross-cultural literature of self-esteem. On one hand, the current research suggested that the RSES is invariant across

cultures, and to our knowledge this may be the first report addressing the factor structure and equivalence of the RSES in Costa Rican adolescents, which demonstrated the general applicability of the RSES in this country. On the other hand, cultural differences in the mean level of self-esteem were frequently examined between collectivistic countries in East Asian and individualistic countries in North America, and these studies found that people in collectivistic cultures had lower score on the RSES than individualistic cultures (Heine et al., 1999). However, the current study extended this issue to another collectivistic yet less studied country (i.e., Costa Rica) and we did not support this claim. This suggested that self-esteem is not the unique characteristic of individualist countries, and further research is needed to examine the relation between individualistic and collectivistic countries and self-esteem.

In conclusion, the current study demonstrated that there are both similarities and differences in self-esteem. However, it would seem premature to close the debate on the cross-cultural differences in self-esteem, and further investigation is highly needed.

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Table 1 Confirmatory factor analyses of Rosenberg Self-Esteem Scale

Countries	Proposed models	χ^2	<i>df</i>	<i>RMSEA</i>	<i>CFI</i>
China (<i>N</i> = 350)	one-factor (10 items)	258.162	35	.135	.943
	two-factor (10 items)	90.839	34	.069	.985
	two-factor (9 items)	73.087	26	.072	.988
Italy (<i>N</i> = 352)	one-factor (10 items)	163.270	35	.102	.944
	two-factor (10 items)	105.302	34	.077	.969
	two-factor (9 items)	96.138	26	.088	.967
Costa Rica (<i>N</i> = 343)	one-factor (10 items)	258.162	35	.135	.943
	two-factor (10 items)	49.308	34	.036	.992
	two-factor (9 items)	44.706	26	.046	.989

Table 2 Multi-group confirmatory factor analyses of Rosenberg Self-Esteem Scale

Models	χ^2	<i>df</i>	<i>RMSEA</i>	<i>CFI</i>	ΔCFI
Model 1 Configural model	254.494	102	.066	.987	-
Model 2a Metric invariance	413.258	122	.083	.975	.012
Model 2b Partial metric invariance with freeing item 1	375.077	120	.078	.978	.009
Model 2c Partial metric invariance with freeing item 1 and 8	331.321	118	.072	.982	.005
Model 3 Scalar invariance	378.867	148	.067	.980	.002

Table 3 Cultural difference in mean levels of Rosenberg Self-Esteem Scale

	China		Italy		Costa Rica		<i>F</i>	η^2	Bonferroni Post-hoc
	M	SD	M	SD	M	SD			
Positive self-esteem	15.36	2.63	15.46	2.48	16.23	2.31	12.72**	.024	China / Italy < Costa Rica
Negative self-esteem	13.50	2.77	14.42	3.08	15.26	3.31	28.45**	.052	China < Italy < Costa Rica

Note: ** $p < .01$

Table 4 Correlations between main variables

	China			Italy			Costa Rica		
	1	2	3	1	2	3	1	2	3
1 positive self-esteem	-			-			-		
2 negative self-esteem	.51**	-		.53**	-		.47**	-	
3 depression	-.52**	-.58**	-	-.64**	-.41**	-	-.50**	-.56**	-

Note: ** $p < .01$