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**Title**

Adolescent Self-Esteem in Cross-Cultural Perspective

**Permalink**

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**Journal**

Journal of Cross-Cultural Psychology, 35(6)

**ISSN**

0022-0221

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**Publication Date**

2004-11-01

**DOI**

10.1177/0022022104270114

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Peer reviewed

# ADOLESCENT SELF-ESTEEM IN CROSS-CULTURAL PERSPECTIVE

## Testing Measurement Equivalence and a Mediation Model

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Theorists and researchers have raised the question of whether self-esteem has similar meanings and correlates in individualistic and collectivist cultures. This study examined the cross-cultural equivalence of the Rosenberg Self-Esteem Scale in four countries and compared its association with parental warmth and acceptance and depressed mood. Participants were 11th graders in the United States ( $n = 422$ ), the Czech Republic ( $n = 490$ ), China ( $n = 502$ ), and Korea ( $n = 497$ ). Cross-cultural similarities in the factor structure of the self-esteem scale and in the relations of self-esteem to other variables were more striking than cross-cultural differences. Across cultures, parental warmth was significantly related to both positive and negative self-image, each of which in turn was related significantly to depressive symptomatology. There was little evidence for the hypothesis that self-esteem would more strongly mediate the relation between parental warmth and adolescent depressive symptoms in the more individualistic (as opposed to collectivist) cultures.

**Keywords:** self-esteem; cross-cultural; measurement equivalence; depressed mood; parental warmth

**Psychologists and lay people** within a Western cultural tradition generally view the development of self-esteem as a positive outcome in its own right as well as a foundation for other desirable life outcomes. An abundance of studies attest to the links between high self-esteem and various indicators of children's and adolescents' psychological well-being. For example, high self-esteem has been shown to be positively correlated with measures of subjective well-being (Lucas, Diener, & Suh, 1996) and negatively correlated with depression or depressive symptoms (Lasko et al., 1996; Rosenberg, Schooler, & Schoenbach, 1989). In addition, researchers have shown that self-esteem may be a major factor in explaining some adolescents' resilience to stress and depression (Dumont & Provost, 1999). Adolescents with low self-esteem have a higher level of externalizing problems and lower academic achievement (DuBois, Bull, Sherman, & Roberts, 1998).

However, researchers also have demonstrated that average levels of self-esteem vary across cultures and that self-esteem may be less important for positive developmental outcomes in some cultural contexts than others. For example, recent studies indicate that North American children and adolescents had higher total self-esteem scores than their Chinese

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AUTHORS' NOTE: The authors are grateful to Dr. Qi Dong and Dr. Sang-Min Whang, who oversaw data collection and data entry for the Chinese and Korean samples, respectively. Data collection in China, Korea, and the United States was supported by a grant from the University of California Pacific Rim Research Program. Correspondence concerning this article may be addressed to any of the first four authors at Department of Psychology and Social Behavior, 3340—Social Ecology II, University of California, Irvine, CA 92697-7085; e-mail: sfarrugg@uci.edu, cschen@uci.edu, egreenbe@uci.edu, or jdmitrie@uci.edu.

JOURNAL OF CROSS-CULTURAL PSYCHOLOGY, Vol. 35 No. 6, November 2004 719-733

DOI: 10.1177/0022022104270114

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(Chiu, 1992-1993) and Japanese counterparts (Heine, Lehman, Markus, & Kitayama, 1999) and that adolescents from England scored more favorably on measures of self-concept than did Nigerian adolescents (Olowu, 1983). Moreover, Diener and Diener (1995) found that self-esteem predicted life satisfaction better in individualistic than collectivist cultures. In other research on this theme, Markus and Kitayama (1991) proposed that self-enhancement (analogous to holding a positive view of the self) is undesirable in certain Asian cultures, and Heine and Lehman (1999) showed that the discrepancy between the real and ideal self was less distressing to Japanese college students than to Canadian students.

These cross-cultural findings can be interpreted in several ways. On one hand, it might be true that adolescents in different cultural contexts develop different average levels of self-esteem. It might also be the case that there are cross-cultural differences in the importance of self-esteem for various adolescent outcomes. On the other hand, differences in cross-cultural studies of self-esteem could be spurious (i.e., a result of using measures that are not appropriate across cultures). This study addresses these issues by examining the cross-cultural measurement equivalence of the Rosenberg Self-Esteem Scale (1965) and investigating the relations of self-esteem to parental warmth and acceptance and to adolescent depressive symptomatology in four samples of adolescents.

#### CROSS-CULTURAL MEASUREMENT EQUIVALENCE

During the past decade, psychologists have made concerted efforts to expand their research on a wide variety of topics (for example, self-esteem) to cultures other than their own. With some notable exceptions, however, research on the cross-cultural equivalence of assessment tools has not kept pace with this development. Recent research on the measurement of depression illustrates the importance of ensuring that measures are in fact equivalent across cultures. Studies of the Beck Depression Inventory (BDI; Byrne & Baron, 1994; Byrne & Campbell, 1999) indicated that the BDI did not demonstrate factorial equivalence across the several cultural groups that were compared. (For a more thorough discussion of issues of cross-cultural measurement equivalence, see Drasgow, 1984; Flaherty, Graviria, Pathak, & Mitchell, 1988; Hui & Triandis, 1985; Lonner, 1980, among others.)

Various measures of self-esteem have been used in cross-cultural research. The degree of discrepancy between the ideal and real selves, for example, has been used as an indirect measure of self-esteem (Heine & Lehman, 1999). The Rosenberg Self-Esteem Scale (1965) is one of the most widely used direct measures of self-esteem. Although the Rosenberg scale was originally designed as a single-factor scale, the structure of the scale continues to be debated (Greenberger, Chen, Dmitrieva, & Farruggia, 2003). Several studies (e.g., Bachman & O'Malley, 1986; Carmines & Zeller, 1979; Demo, 1985; Goldsmith, 1986; Kaplan & Pokorny, 1969; Owens, 1993, 1994; Tafarodi & Swann, 1995) have revealed a two-factor structure of the scale, made up of a positive self-image subscale and a negative self-image subscale. Other researchers have challenged the dual dimensionality of the Rosenberg scale and presented evidence suggesting that it is unidimensional (Hensley, 1977; Hensley & Roberts, 1976; Marsh, 1996). The factor structure of the self-esteem scale has been examined across ethnic groups within the United States and generally found to be similar (Owens & King, 2001). However, researchers have seldom examined the cross-cultural equivalence of this measure. (For recent exceptions, see Bush, Beane, Bartle-Haring, Peterson, and Wilson's [2000] study of a shortened version of the Rosenberg Scale, and Miyamoto et al. [2001].)

The uni- or bidimensionality of the Rosenberg Self-Esteem Scale is especially important to consider in comparative studies of Asian and Western groups with different traditions of

describing the self. In Asian as compared with Western cultures self-enhancement (such as expressing positive views about the self) appears to be less socially appropriate than self-criticism (e.g., admitting to faults; Markus & Kitayama, 1991). As a result of these cultural scripts, average scores on the positive and negative subscales of the Rosenberg Self-Esteem scale might differ across adolescents in Asian and Western countries, as might the relations of the two subscales to other adolescent outcomes.

#### CORRELATES OF SELF-ESTEEM

As briefly indicated earlier, numerous studies have demonstrated that self-esteem is inversely related to depression in Western samples (Lasko et al., 1996; Rosenberg, 1965; Rosenberg, Schooler, & Schoenbach, 1989) and positively related to indicators of subjective well-being in various cultures (Lucas et al., 1996). Owens (1994), in a longitudinal study of a European American sample of adolescents, demonstrated that both the positive self-image and negative self-image subscales of the Rosenberg measure, but especially the latter, were linked to depressive symptomatology. In addition to examining the possible outcomes of self-esteem, researchers have investigated the correlates and possible sources of self-esteem. For example, researchers have demonstrated that parental warmth and acceptance is linked to higher self-esteem in American, Australian, German, Chinese, and Vietnamese adolescents (Barber, Chadwick, & Oerter, 1992; Herz & Gullone, 1999; Juang & Silbereisen, 1999; Kurdek & Fine, 1994; Shek, 1999). Similarly, self-esteem is strongly associated with social support from the family (DuBois, Felner, Sherman, & Bull, 1994) and with parental interest and involvement in their youngsters' lives (Rosenberg, 1965).

A separate line of research has focused on the link between parent-child relationships and adolescent depressive symptomatology. It is not surprising that some of the same family variables that appear to influence adolescents' self-esteem are also associated with the number and/or frequency of adolescents' depressive symptoms (a common correlate and possible consequence of low self-esteem). For example, the positive associations of parental warmth with adolescents' mood have been shown in a number of different cultural and ethnic groups, including Asian and European Americans (Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987; Greenberger & Chen, 1996; Lamborn, Mounts, Steinberg, & Dornbusch, 1991), Latinos (Lamborn et al., 1991), African Americans (Dornbusch et al., 1987; Lamborn et al., 1991), Hong Kong Chinese (Feldman, Rosenthal, Mont-Reynaud, & Leung, 1991), and mainland Chinese (Greenberger, Chen, Tally, & Dong, 2000). Longitudinal research by Ge, Lorenz, Conger, Elder, and Simon (1994) indicates that prior parental warmth is associated with current adolescent depressed mood for a U.S. sample.

#### THIS STUDY

This study had two objectives. First, we addressed the issue of cross-cultural equivalence of the key measure: the Rosenberg Self-Esteem Scale (1965). Samples of adolescents were assessed in four countries (United States, the Czech Republic, China, and Korea). The United States and Czech Republic were selected to represent individualistic societies (Triandis, 1995); China and Korea were selected to represent collectivist societies. According to a recent study (Suh, Diener, Oishi, & Triandis, 1998), the United States was the most individualistic among 68 countries studied and had an individualism/collectivism score of 9.55 on a 10-point scale (1 = *most collectivist*, 10 = *most individualistic*). The Czech Republic (combined with Slovakia) had a score of 7.00. China was the most collectivist, with a score of 2.00, and South Korea's score was 2.40.

Based on unresolved questions concerning the dimensionality of the Rosenberg scale, we decided to test both one-factor and two-factor models of the Rosenberg scale and the equivalence of item loadings on the resulting factor or factors. With one exception, we had no reason to expect cross-cultural differences in the equivalence of the scale. Previous researchers (Cheng & Hamid, 1995) found that Item 8 (“I wish I could have more respect for myself”) had a close-to-zero correlation with the rest of the Rosenberg items for a sample of Chinese college students and community adults, possibly due to cultural differences in the meaning of *wishing*. According to Whang (personal communication, 2001), wishing does not necessarily imply a lack of the desired attribute or state in some Korean or other Asian cultures but an ideal condition to which one can aspire. We therefore expected this item to have a low factor loading for both the Chinese and Korean samples. Based on previous research (Heine et al., 1999), we also expected that the mean level of self-esteem would be lower for adolescents from the two collectivist societies (China and Korea) than for adolescents in the United States and Czech Republic.

The second objective of this study was to examine the relations among parental warmth, self-esteem, and level of depressive symptomatology. We expected that both parental warmth and self-esteem would be related to depressive symptoms across the four samples in this study. In addition, we expected that self-esteem would partially mediate the effects of parental warmth and acceptance on depressive symptomatology. If the assessment of measurement equivalence across cultures should reveal a two-factor structure of the Rosenberg scale (i.e., with separate positive and negative subscales of self-evaluation), we will test these hypotheses using the two subscale scores rather than a total self-esteem score. Finally, we expected that the mediating role of self-esteem would be stronger in the two individualistic societies than in the two collectivist societies. In other words, we expected parental warmth to have a stronger effect on self-esteem, which in turn would have a stronger association with depressive symptomatology in individualistic societies than in collectivist societies. This hypothesis is plausible because (a) positive parenting practices (e.g., parental warmth) are believed to promote traits valued by the society (e.g., self-esteem in individualistic societies), and (b) greater emphasis on the self in individualistic societies can lead to an especially important role of self-esteem in contributing to adolescent psychological well-being (Heine & Lehman, 1999).

## METHOD

### PARTICIPANTS

Participants were 11th graders from four countries: the United States ( $n = 422$ ), Czech Republic ( $n = 496$ ), China ( $n = 502$ ), and Korea ( $n = 497$ ). All samples were approximately half male and half female, although the U.S. sample had slightly more females than males (56% female). Participants attended public high schools in middle-class or working-class neighborhoods. U.S. participants came from an ethnically diverse Los Angeles-area school (53% White, 16% Latino, 12% Asian, 11% African American, and 8% biracial or other). Participants from the other three countries were quite ethnically homogeneous: 94% of the Chinese sample (from Tianjin, China) were Han Chinese; 100% of the Korean sample (from Seoul, Korea) were Korean; and 89% of the Czech sample (from Brno, Czech Republic) were White, 8% Asian, and 3% other. Chinese students were on average 1 year older (17.6 years) than other participants because they begin school 1 year later than Korean (16.5

years), American (16.6 years), and Czech students (16.9 years). There were significant differences in paternal educational attainment,  $F(3, 1607) = 56.37, p < .001$ , and maternal educational attainment,  $F(3, 1650) = 75.47, p < .001$ . Chinese fathers were found to be less educated (2.2) than fathers from the United States (2.8), Korea (2.9), and Czech Republic (3.0), based on a 5-point scale (1 = *junior high school*, 2 = *high school*, 3 = *some college or vocational school*, 4 = *college graduate*, 5 = *graduate school or professional school*). Chinese mothers were also less educated (1.8) than Korean mothers (2.3), who, in turn, were less educated than U.S. (2.7) and Czech (2.7) mothers. These parental education differences reflect cultural differences in educational opportunities.

### PROCEDURES

Participants completed an anonymous, self-report questionnaire during a regular class period in school. Parental and adolescent consent was obtained from the U.S. participants. Of the 600 11th-grade students enrolled in the school, 444 (74%) were present and had acquired the necessary consent to participate.<sup>1</sup> For the Czech Republic, China, and Korea, consent for the students to participate was given by the school; students then had the opportunity to give or withhold consent. Approximately 95% of students in these three settings agreed to participate.

### MEASURES

Two of the authors worked with Czech, Chinese, and Korean researchers to operationalize the constructs and the wording of measures used to assess them. Bilingual researchers translated the entire survey and approved each other's translations.

Self-esteem was assessed by the 10-item Rosenberg Self-Esteem Scale (1965). Adolescents responded to statements such as, "I feel that I have a number of good qualities," with responses ranging from 1 = *strongly disagree* to 6 = *strongly agree*. Five of the items on this scale are positively worded, and 5 of the items are negatively worded. Cronbach's alphas for the four samples were United States,  $\alpha = .88$ ; Czech Republic,  $\alpha = .76$ ; China,  $\alpha = .83$ ; and Korea,  $\alpha = .71$ .

Parental warmth and acceptance was assessed by an 11-item scale (Greenberger, Chen, & Beam, 1998). Participants responded to statements such as, "I really don't feel that my parents love me" (reverse-coded) on a 6-point scale ranging from 1 = *strongly disagree* to 6 = *strongly agree*. In all countries, the scale had adequate internal consistency (United States,  $\alpha = .88$ ; Czech Republic,  $\alpha = .86$ ; China,  $\alpha = .76$ ; Korea,  $\alpha = .84$ ).

The factor structure of the Parental Warmth and Acceptance Scale has been examined previously (Chen, Farruggia, Greenberger, & Powers, 2002). Exploratory factor analysis revealed a single factor within each country that accounted for 31% to 46% of total item variance. Multigroup confirmatory factor analysis showed some cross-cultural differences in the magnitude of factor loadings with  $\Delta\chi^2(30) = 85.20, p < .001$ , and significant cross-cultural variations in the magnitude of indicator means and error term variances with  $\Delta\chi^2(30) = 1,102.91, p < .001$  and  $\Delta\chi^2(33) = 498.51, p < .001$ , respectively. Fit indices were all within acceptable range (most CFIs and TLIs above .95 and RMSEAs below or close to .05), indicating adequate support for strict factorial cross-cultural measurement equivalence.

Depressed mood was assessed by the 20-item Center for Epidemiologic Studies Depression Scale (CES-D Scale; Radloff, 1977). This scale assessed symptom frequency during the past month, with responses ranging from 1 = *never* to 4 = *almost every day*. A sample item

from this scale was “I could not get going.” The CES-D had high internal consistency: United States,  $\alpha = .89$ ; Czech Republic,  $\alpha = .87$ ; China,  $\alpha = .85$ ; and Korea,  $\alpha = .87$ .

The structure of CES-D initially was demonstrated by Radloff (1977) for a U.S. sample. She identified four factors described as (a) depressed affect, (b) interpersonal problems, (c) somatic symptoms, and (d) positive affect. Since Radloff’s original study, researchers have found a similar four-factor structure of the CES-D for several different ethnic groups in the United States, for example, Mexican Americans and White Americans (Golding & Aneshensel, 1989), White and Chinese Americans (Ying, Lee, Tsai, Yeh, & Huang, 2000), and native Hawaiians and non-Hawaiians (McArdle, Johnson, Hishinuma, Miyamoto, & Andrade, 2001). The factor structure for the CES-D responses in this study has been explored previously by Tally et al. (2000), who showed that a four-factor model had a good fit,  $\chi^2(8) = 13.58$ , n.s.; CFI = .998, GFI = .996, TLI = .993, and RMSEA = .019, for the four samples used in this study (i.e., the U.S., Czech, Chinese, and Korean samples) and, in addition, for a Bulgarian sample. To avoid redundant analyses, this study will only focus on a model of CES-D made up of the latent variable, depressed mood, and four summary-score variables: depressed affect, positive affect, interpersonal problems, and somatic complaints. All summary scores had adequate to high factor loadings. There were significant cross-cultural variations in the magnitude of factor loadings,  $\Delta\chi^2(9) = 25.41$ ,  $p < .01$ . Differences were present for the somatic complaints subscale,  $\Delta\chi^2(3) = 16.20$ ,  $p < .001$ , with the factor loadings for the U.S. sample significantly lower than the factor loadings for the other groups ( $\Delta\chi^2[1] = 15.56$ ,  $p < .001$ ).

#### PLAN OF ANALYSIS

Prior to conducting the main analyses of this study, we examined missing data. Missing data represented only a minor problem. Data for 22 U.S. students were dropped from further analyses due to excessive missing data on key variables, such as the Self-Esteem Scale. After deletion of these cases, fewer than 4% of participants failed to complete each scale in its entirety. The EM algorithm (Dempster, Laird, & Rubin, 1977) was used to replace the missing values for items to which participants did not respond. This regression method repeatedly predicts an estimate of the missing value until it converges on a single solution.

The main analyses of the study involved confirmatory factor analyses and path analysis. Confirmatory factor analyses were performed to investigate the factor structure of the Rosenberg Self-Esteem Scale. Latent mean estimates were compared across countries to explore mean differences in self-esteem, parental warmth and acceptance, and symptoms of depression. Structural equation models were used to evaluate the role of self-esteem in partially mediating the relation of parental warmth and acceptance to adolescent depressive symptomatology.

## RESULTS

#### FACTOR STRUCTURE OF THE SELF-ESTEEM SCALE ACROSS FOUR CULTURES

The cross-cultural equivalence of the self-esteem scale was examined at four levels of measurement equivalence (Meredith, 1993): (a) configural (or pattern) invariance, with factor structure compared across the four cultural groups, (b) weak factorial invariance, with

**TABLE 1**  
**Cross-Cultural Equivalence of the Self-Esteem Scale**

<i>Model</i>	<i>df</i>	$\chi^2$	<i>Diff. df</i>	<i>Diff. <math>\chi^2</math></i>	<i>CFI</i>	<i>GFI</i>	<i>TLI</i>	<i>RMSEA</i>
One factor								
United States	35	325.51	—	—	.852	.829	.809	.140
Czech Republic	35	436.40	—	—	.732	.804	.655	.152
China	35	236.55	—	—	.784	.888	.735	.107
Korea	35	261.81	—	—	.858	.901	.818	.114
Two factor (10-item)								
United States	34	136.87	—	—	.947	.931	.930	.085
Czech Republic	34	193.46	—	—	.893	.923	.859	.097
China	34	134.01	—	—	.898	.946	.865	.077
Korea	34	204.09	—	—	.894	.923	.859	.100
Two factor (nine-item)								
United States	26	124.50	—	—	.945	.932	.924	.095
Czech Republic	26	143.42	—	—	.916	.935	.884	.096
China	26	81.12	—	—	.941	.963	.918	.065
Korea	26	180.20	—	—	.903	.924	.865	.109
Modified two factor (nine-item)								
United States	23	77.66	—	—	.970	.960	.953	.075
Czech Republic	23	100.12	—	—	.945	.956	.914	.082
China	23	55.25	—	—	.965	.975	.946	.053
Korea	23	91.48	—	—	.957	.960	.932	.077
Baseline configural invariance	92	324.52	—	—	.959	.963	.936	.036
Weak factorial invariance	113	391.02	21	66.50	.951	.956	.938	.036
Strong factorial invariance	134	915.80	21	524.78	.984	— <sup>a</sup>	.978	.055
Strict factorial invariance	161	1,156.57	27	240.77	.979	— <sup>a</sup>	.977	.057

NOTE: All  $\chi^2$  and  $\chi^2$  difference estimates were significant at the  $p < .001$  level.

a. The GFI index is not computed for latent mean structure models (Byrne, 2001).

factor loadings constrained to be the same across the four countries, (c) strong factorial invariance, with factor loadings and indicator means constrained to be the same across the four countries, and (d) strict factorial invariance, with factor loadings, indicator means, and indicator variances constrained to be the same across the four groups.

Results of confirmatory factor analysis using AMOS 4.0 (Arbuckle & Wothke, 1999) indicated a poor model fit for the single-factor, 10-item Self-Esteem Scale (see Table 1). A two-factor model made up of factors that reflect positive self-image and negative self-image had a significantly better fit. However, this model still did not fit the data for the Czech Republic, China, or Korea. As anticipated, Item 8 of the Self-Esteem Scale, "I wish I could have more respect for myself," did not load adequately on the negative self-image factor for the Chinese ( $\lambda = -.11$ ) or Korean ( $\lambda = -.13$ ) samples. Similarly, the modification indices indicated that although this item had a marginal factor loading of .37 for the Czech sample, removal of the item would improve the overall fit for this group. Therefore, Item 8 was deleted, and the analyses for the Czech Republic, China, and Korea were rerun. There was a significant reduction in chi-square for all three countries:  $\Delta\chi^2(8) = 50.04, p < .001$ , for the Czech Republic;  $\chi^2(8) = 52.89, p < .001$ , for China; and  $\Delta\chi^2(8) = 23.79, p < .001$ , for Korea.

The results for the two-factor (nine-item) model of the Rosenberg Self-Esteem Scale revealed some but not sufficient improvement of the model fit (see Table 1). After inspection



**TABLE 2**  
**Unstandardized Loadings ( $\lambda$ ) of Self-Esteem Scale Items**

<i>Scale Item</i>	<i>United States</i>	<i>Czech Republic</i>	<i>China</i>	<i>Korea</i>
Positive self-image				
Item 1—On the whole, I am satisfied with myself.	1.00	1.00	1.00	1.00
Item 3—I feel that I have a number of good qualities.	0.85	0.70	0.83	1.01
Item 4—I am able to do things as well as most other people.	0.72	0.60	1.02	0.88
Item 7—I feel that I am a person of worth, at least on an equal basis with others.	0.77	0.57	1.05	0.89
Item 10—I take a positive attitude toward myself.	0.99	0.94	1.08	1.15
Negative self-image				
Item 2—At times, I think I am no good at all.	1.00	1.00	1.00	1.00
Item 5—I feel I do not have much to be proud of.	1.10	0.73	1.09	1.50
Item 6—I certainly feel useless at times.	1.14	1.20	1.23	1.56
Item 9—All in all, I am inclined to feel that I am a failure.	1.10	1.14	1.29	1.62

NOTE: All path coefficients were significant at the  $p < .001$  level.

of the modification indices, several correlations were added among the error terms within each of the two factors. Specifically, correlations were added between Items 3 and 4, 4 and 7, and 5 and 9 (see Table 2 for item content); correlations among error terms for pairs belonging to different factors were not included. The modified nine-item model shown in Table 1 had an adequate fit for all countries. All items included in the model had adequate to high factor loadings (see Table 2). The positive and negative subscales were significantly correlated for all countries: United States,  $\phi = -.78, p < .001$ ; Czech Republic,  $\phi = -.63, p < .001$ ; China,  $\phi = -.64, p < .001$ ; and Korea,  $\phi = -.85, p < .001$ . The chi-square difference test (see Table 1) indicated cross-cultural differences in the magnitude of factor loadings with  $\Delta\chi^2(21) = 66.50, p < .001$ . The differences were present for Item 5 ( $\Delta\chi^2[3] = 20.79, p < .001$ ) and Item 7 ( $\Delta\chi^2[3] = 16.58, p < .001$ ). (See Table 2 for the content of these items.) There were also significant cross-cultural variations in indicator means ( $\Delta\chi^2[21] = 524.78, p < .001$ ) and error term variances ( $\Delta\chi^2[27] = 240.77, p < .001$ ). In view of the large overall sample size ( $N = 1,911$ ), measurement equivalence was evaluated with several fit indices (i.e., CFI, TLI, and RMSEA) rather than chi-square or chi-square difference tests. Incremental fit indices were within acceptable range (most CFIs and TLIs above .95 and RMSEAs below or close to .05; see Table 1), indicating adequate support for strict factorial cross-cultural measurement equivalence of the nine-item scale.

#### MEAN DIFFERENCES

Multigroup comparisons of latent mean structures were used to explore cross-cultural differences in the mean levels of positive and negative self-image, parental warmth and acceptance, and depressive symptomatology with AMOS 4.0 (Arbuckle & Wothke, 1999). For self-esteem, the model had a good fit (see fit statistics for the Strong Factorial Invariance Model in Table 1). There was considerable variation in mean levels of positive and negative self-image (see Table 3). Positive self-image was significantly higher for U.S. and Chinese adolescents than for Czech and Korean adolescents, and significantly lower for Koreans than for adolescents from the other countries. Latent means for the negative self-image subscale generally followed the same pattern: U.S. adolescents had the highest latent means (recall

**TABLE 3**  
**Differences in Latent Mean Estimates for Key Variables**

<i>Scale</i>	<i>United States<sup>a</sup></i>	<i>Czech Republic</i>	<i>China</i>	<i>Korea</i>	<i>Differences Across the Four Countries<sup>b</sup></i>
Self-esteem					
Positive self-image factor	.00	-.45***	-.10	-.97***	K < Cz < Ch, U.S.
Negative self-image factor	.00	-.77***	-.24***	-.57***	Cz < K < Ch < U.S.
Depressed mood	.00	.13**	.00	.15***	Ch, U.S. < Cz, K
Parental warmth	.00	-.05	.19**	-.15**	K, Cz, U.S. < Ch K < U.S.

NOTE: U.S. = United States; Cz = Czech Republic; Ch = China; K = Korea.

a. The United States was used as a comparison group for the initial testing of mean differences.

b. Pairwise comparisons were performed with each country tested as a comparison group.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

that scoring was reversed to reflect rejection of negative self-image) followed by Chinese, Korean, and Czech adolescents, with significant differences between youths from each pair of countries.

A latent mean structures model for the CES-D also had an acceptable fit,  $\chi^2(26) = 365.941$ ,  $p < .001$ ; CFI = .984, TLI = .975, RMSEA = .083. The four subscales of the CES-D were used as indicators of the latent construct depressed mood. U.S. and Chinese adolescents had significantly ( $p < .001$ ) lower mean levels of depressed mood than adolescents from the Czech Republic and Korea (see Table 3). For the parental warmth and acceptance scale, a latent means model also had a good fit ( $\chi^2(216) = 1,633.09$ ,  $p < .001$ ; CFI = .974, TLI = .968, RMSEA = .059). Chinese adolescents had significantly higher latent mean scores than adolescents from all other groups,  $p < .001$ , and Korean adolescents had a significantly lower latent mean estimate than youths from the United States,  $p < .05$  (see Table 3).

To investigate whether the often-reported gender and social class differences in American children's self-esteem (e.g., Kling, Hyde, Showers, & Buswell, 1999; Rosenberg & Simmons, 1972) would be replicated in other cultures, we correlated gender and parental education with the latent constructs of positive and negative self-esteem. Multigroup comparisons revealed that there were no significant cross-cultural differences in the strength of association between gender and positive self-esteem,  $\Delta\chi^2(3) = 3.315$ , n.s., nor between gender and negative self-esteem,  $\Delta\chi^2(3) = 4.493$ , n.s. In general, males reported having slightly, but not significantly, higher self-esteem than did females. Parental education was positively related to self-esteem (both positive and negative subscales) in all four cultures. However, the strength of the association was stronger for Korean adolescents between parental education and positive self-esteem,  $\Delta\chi^2(1) = 9.892$ ,  $p < .01$ .

#### RELATIONS AMONG PARENTAL WARMTH, SELF-ESTEEM, AND DEPRESSIVE SYMPTOMS

As previously noted, we hypothesized that self-esteem would partially mediate the relation between parental warmth and adolescent depressive symptomatology and that the extent of mediation would be stronger in cultures that place more emphasis on the individual self. Using AMOS 4.0 (Arbuckle & Wothke, 1999), the hypothesized model of relations among parental warmth, self-esteem, and depressive symptoms was examined for all four

**TABLE 4**  
**Unstandardized Path Coefficients ( $\gamma$ ) for the Hypothesized Model**

Predictor	<i>g</i>			
	United States	Czech Republic	China	Korea
Positive self-image				
Parental warmth	.51***	.35***	.42***	.47***
<i>R</i> <sup>2</sup>	.28	.07	.18	.30
Negative self-image				
Parental warmth	.48***	.31***	.53***	.34***
<i>R</i> <sup>2</sup>	.28	.12	.25	.20
Depressed mood				
Positive self-image	-.18**	.03	.01	-.20*
Negative self-image	-.21**	-.48***	-.38***	-.22*
Parental warmth	-.06	-.15***	-.18***	-.06
<i>R</i> <sup>2</sup>	.43	.54	.45	.45

NOTE: Negative self-image items were recoded so that higher scores correspond to higher self-esteem and positive affect items were recoded so that higher scores correspond to higher depressed mood.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

countries. The modified two-factor, Rosenberg Self-Esteem Scale (without Item 8), CES-D scale, and the Parental Warmth and Acceptance scale were used in the analysis.

The model had an adequate fit in all countries:  $\chi^2(238) = 610.210$ ,  $p < .001$ ; CFI = .920, GFI = .888, TLI = .907, and RMSEA = .061 for the United States;  $\chi^2(238) = 520.737$ ,  $p < .001$ ; CFI = .930, GFI = .919, TLI = .919, and RMSEA = .049 for the Czech Republic;  $\chi^2(238) = 479.052$ ,  $p < .001$ ; CFI = .916, GFI = .926, TLI = .902, and RMSEA = .045 for China; and  $\chi^2(238) = 675.518$ ,  $p < .001$ ; CFI = .895, GFI = .901, TLI = .878, and RMSEA = .061 for Korea. The overall model (i.e., with all countries included in the analysis) also had a good fit:  $\chi^2(952) = 2285.557$ ,  $p < .001$ ; CFI = .915, GFI = .909, TLI = .902, and RMSEA = .027. When all of the path coefficients were constrained to be the same for the four cultural groups, the chi-square became significantly greater:  $\Delta\chi^2(15) = 38.466$ ,  $p < .001$ . In other words, there were some cross-cultural differences in the degree of associations among the variables in the model (see Table 4). These differences emerged in relation to the three pathways leading to depressed mood. The association between positive self-image and depressed mood was significantly greater for the U.S. and Korean youths than for the Czech and Chinese youths,  $p < .01$ . However, the U.S. and Korean youths had a significantly lower association between negative self-image and depressed mood, and between parental warmth and depressed mood,  $p < .05$ , than did Czech and Chinese adolescents. Clearly, the observed cross-cultural differences in the magnitude of associations did not follow the hypothesized individualistic versus collectivist pattern, and thus our hypothesis of stronger mediation by self-esteem for the individualistic groups was not born out.

*Estimated mean differences in the mediated model.* To evaluate whether cross-cultural differences in the endogenous variables could be explained by cross-cultural differences in the mean levels of the predictor variables, the model of associations among parental warmth, self-esteem, and depressed mood was used to estimate latent means. The model had a good fit,  $\chi^2(1, 113) = 5,072.52$ ,  $p < .001$ ; CFI = .969, TLI = .966, and RMSEA = .043. Comparison

**TABLE 5**  
**Differences in Latent Mean Estimates,**  
**Controlling for the Effects of the Predictor Variables<sup>a</sup>**

<i>Scale</i>	<i>United States<sup>b</sup></i>	<i>Czech Republic</i>	<i>China</i>	<i>Korea</i>	<i>Differences Across the Four Countries<sup>c</sup></i>
Self-esteem					
Positive self-image factor	.00	-.39***	-.17**	-.82***	K < Cz < Ch < U.S.
Negative self-image factor	.00	-.81***	-.32***	-.56***	Cz < K < Ch < U.S.
Depressed mood	.00	-.97***	-.34***	.07	Cz < Ch < U.S., K

NOTE: U.S. = United States; Cz = Czech Republic; Ch = China; K = Korea.

a. For the two self-image subscales, effects of parental warmth were statistically controlled; for the four CES-D subscales, effects of parental warmth and self-esteem were statistically controlled.

b. The United States was used as a comparison group for the initial testing of mean differences.

c. Pairwise comparisons were performed with each country tested as a comparison group.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

of Tables 4 and 5 shows that controlling for cross-cultural differences in estimated means of parental warmth resulted in little change in estimated means of self-esteem. However, after controlling for the relatively high self-esteem reported by U.S. participants, the estimated mean of depressed mood for the U.S. youths became significantly higher than the estimated means for Czech and Chinese adolescents and were no longer significantly lower than those for Korean youths.

## DISCUSSION

The factor structure of the Rosenberg Self-Esteem Scale was examined in adolescent samples from four countries. With Item 8 deleted ("I wish I could have more respect for myself"), a nine-item, two-factor model (positive and negative self-image) had a good fit with the data for all four countries. The resulting scale can therefore be considered equivalent across the samples we studied. The two-factor representation of Rosenberg's scale we found is consistent with previous research with U.S. samples (Bachman & O'Malley, 1986; Carmines & Zeller, 1979; Demo, 1985; Goldsmith, 1986; Kaplan & Pokorny, 1969; Owens, 1993; Tafarodi & Swann, 1995). The failure of Item 8 to load on either factor of the Rosenberg scale for the Chinese and Korean samples might be due to cultural differences in the meaning of wishing. As noted earlier, in Korean and other Asian cultures, wishing does not necessarily signify the lack of a desired attribute or state but an ideal condition to which one might aspire. Thus, some Chinese or Korean adolescents with high self-esteem (but not, typically, U.S. adolescents with high self-esteem) might nonetheless agree with the statement, "I wish I could have more respect for myself." Researchers who conduct cross-cultural research on self-esteem should explore alternative wording of this item.

Cross-cultural mean differences on the positive and negative subscales of the Rosenberg Self-Esteem Scale followed a similar pattern. On average, U.S. and Chinese adolescents had higher scores on the two subscales of self-esteem than Czech or Korean adolescents. (Korean adolescents had the lowest positive self-image scores, and Czechs the lowest self-esteem as measured by negative self-image scores.) The fact that self-esteem is higher for the U.S. sample than for the Korean sample is consistent with the notion that endorsement of

positive statements and rejection of negative statements about the self are more acceptable in individualistic societies. However, this conclusion appears to be too simple: Results for adolescents in the other individualistic culture, the Czech Republic, did not place them closer to U.S. adolescents than to youths from the two collectivist, Asian cultures. Similarly, results for Chinese adolescents did not map most closely onto those for Korea. One possible explanation would be that the high self-esteem score for the Chinese youth may be due to their high parental warmth score. However, the high self-esteem score for the Chinese youth did not decline in relation to the other three groups after controlling for parental warmth. It appears more likely that cultural attributes other than individualism and collectivism contribute to the cross-cultural mean differences in self-esteem found in this study and others.

Researchers who are interested in the cross-cultural study of adolescents' self-esteem, including its potential sources and outcomes, should first undertake studies of the cross-cultural equivalence of measures they propose to use. Based on this study, we suggest that a modified version of the Rosenberg Self-Esteem Scale is a good candidate for cross-cultural research. Results of this study also suggest that neither the level of adolescents' self-esteem nor its associations with perceived parental warmth and acceptance and depressive symptoms is well accounted for by the distinction between individualistic and collectivist cultures. Other studies (e.g., Heine & Lehman, 1999; Heine, Takata, & Lehman, 2000) that are based on two-country comparisons (e.g., Canada and Japan) may lead to conclusions about the measurement of self-esteem, its distribution across cultures, and its relations to other variables that do not stand up to more comprehensive investigations. Researchers who are intrigued by the relation of cultural themes such as individualism and collectivism to other phenomena need to "test the limits" by including more than one—and preferably several—cultures that exemplify a presumed cultural theme. This line of study would also be enhanced by the addition of measures that allow participants to express the degree to which they personally endorse the themes that are thought to characterize their culture.

This study improves on previous research in three ways. First, the study was theory driven. It built on previous research by developing theoretical models and testing them. Second, the four samples used in the study were strategically selected. The samples were selected to represent two individualistic (U.S. and Czech Republic) and two collectivist (China and Korea) cultures. Previous research has often included only one sample per cultural type. Third, this study used recently developed methods that may be of use to other investigators who plan to examine measurement equivalence in their research with multiple samples.

Two limitations of the study should be noted. First, it was not longitudinal. Thus, we cannot infer causal relations among parental warmth and acceptance, self-esteem, and depressed mood. Second, we used only one measure of each of the key constructs (parental warmth and acceptance, self-esteem, and depressed mood). Future studies of measurement equivalence would be enhanced by using multiple measures of key constructs.

## NOTE

1. The U.S. sample included two cohorts of 11th graders, surveyed 1 year apart. Analyses on key variables (i.e., self-esteem, depressed mood, and parental warmth) revealed no significant differences between the two groups.

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