

## Dimensionality and Validity of the Rosenberg Self-Esteem Scale for Use With Latino Adolescents

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### **Abstract:**

This study evaluated the construct validity and factor structure of the Rosenberg Self-Esteem Scale (RSES) using a large sample ( $n = 814$ ) of adolescents in Mexican, Salvadoran, and Guatemalan immigrant families who completed surveys in English. Results suggested that the RSES may be best specified as assessing two somewhat distinct yet related constructs. There was a high degree of measurement equivalence across the three nationality groups and also a high degree of equivalence across samples separated by generational status (adolescents born in the United States vs. not). There was relatively strong evidence to suggest that bidimensionality of the RSES for use with Salvadoran and Guatemalan adolescents is related to method effects associated with negatively worded items. Findings also suggested that two RSES factors (positive self-esteem and self-deprecation) assess substantively distinct elements of self-esteem as psychological control by mothers, age, and generational status were more strongly related to a self-deprecation (negatively worded items) factor than to a positive self-esteem factor. Implications for using the RSES in research on Latino adolescents are discussed.

**Keywords:** Factor Structure | Rosenberg | Self-Esteem | Adolescents | Validity | Latinos

### **Article:**

Numerous studies over the past 40 years have employed the Rosenberg Self-Esteem Scale (RSES) to assess adolescents' global feelings of self-worth and associations between both predictors of self-esteem and a variety of developmental outcomes. Despite its wide use, little evidence exists supporting the validity and factor structure of the RSES when used with samples of adolescents in immigrant families from Latin America. Unanswered questions relate to (a) the factor structure and dimensionality of the RSES for use with Latinos and (b) within Latino variation in RSES measurement properties across national origin groups and generational status. To address these issues, this study employed a confirmatory factor analysis (CFA) strategy to

examine the factor structure and cross-group equivalence of the RSES using samples of adolescents in immigrant families from Mexico, Guatemala, and El Salvador.

### **Dimensionality of the RSES and Cross-Cultural Validity**

Although measurement studies related to the RSES are few, the available studies have most prominently focused on the factor structure or dimensionality of the RSES and the cross-cultural validity of the RSES. This first issue relates to questions regarding whether the RSES assesses a single unidimensional construct or if the RSES is better specified as comprising two subdimensions of self-esteem. Evidence for a bidimensional factor structure comes from exploratory factor analysis studies pointing to two RSES factors (Carmines & Zeller, 1979) and CFA alternative models studies finding that a bidimensional model demonstrates a superior fit compared to a unidimensional RSES model (see Greenberger, Chen, Dmitrieva, & Farruggia, 2003 for a review). These studies have consistently found that one putative factor is composed of the five positively worded RSES items (typically labeled *positive self-esteem*) with a second factor comprised of the five negatively worded items (labeled either *self-deprecation* or *negative self-esteem*). To the extent that the RSES is assessing two different self-esteem factors, researchers introduce measurement error into their studies and downwardly bias certain Respondents' self-esteem scores by summing or averaging across RSES items (after reverse coding negatively worded items; Corwyn, 2000; Owens, 1994; Quilty, Oakman, & Risko, 2006).

Although there is ample evidence to suggest that the RSES may be best specified as bidimensional, some researchers argue that findings of bidimensionality in the RSES result from ignorable method effects associated with the inclusion of both positively and negatively worded items in the same scale (i.e., there are not two substantively meaningful RSES subdimensions). Beginning with studies by Marsh (1996), researchers have demonstrated that response effects can be accounted for in CFA and structural equation modeling analyses (either by modeling a method effects factor or by correlating residual errors among certain items) and that once method effects are taken into account, unidimensional RSES models demonstrate a good fit to sample data (Corwyn, 2000; Marsh, 1996; Quilty et al., 2006; Tomas & Oliver, 1999). Across these studies, method effects are most pronounced for the negatively worded items.

An additional argument *for* a bidimensional RSES factor structure posits that if differential patterns of association are observed between RSES subdimensions and other theoretically related factors, there is evidence that the two subdimensions represent substantively distinct constructs rather than method effects (Ang, Neubronner, Oh, & Leong, 2006; Owens, 1994; Quilty et al., 2006). Evidence in support of such arguments comes from studies demonstrating that positive self-esteem correlates more consistently with academic outcomes, whereas negative self-esteem is more consistently related to depression, deviant behaviors, and personality (Ang et al., 2006 studying 7th-grade students in Singapore; Owens, 1994 studying 10th- and 11th-grade students in the United States surveyed in 1974; and Quilty et al., 2006 studying college students and adults in Canada). Moreover, differential patterns of association may vary across cultural groups. Farruggia and colleagues (2004) found, for example, that both positive self-esteem and negative self-esteem were associated with depressed mood for adolescents in the United States and Korea, but only negative self-esteem was related to depression for Chinese and Czech respondents (Farruggia, Chen, Greenberger, Dmitrieva, & Macek, 2004).

The second major measurement issue concerns the cross-cultural validity of the RSES and its applicability for use with Latino adolescents. Researchers often consider the extent to which a measure demonstrates cross-ethnic equivalence or invariance related to factor structure (configural invariance), item loadings (measurement invariance), or how factors associate with other dimensions of development (functional equivalence) across cultural groups. Studies have yet to consider, however, these issues with samples of Latino adolescents. While very few studies consider the cross-cultural validity of the RSES, the few available studies tend to suggest that (a) factor structures are relatively similar across cultures, but that bidimensionality in the RSES may be particularly pronounced for non-European American samples (Farruggia et al., 2004; Schmitt & Allik, 2005); (b) item loadings tend to be similar across cultural groups with the exception of the “I wish I had more respect for myself” item (Schmitt & Allik, 2005 comparing adults across 53 countries; Farruggia et al., 2004; Greenberger et al., 2003, comparing Asian American and European American college students); and (c) patterns of association between either unidimensional RSES factors or scales and bidimensional RSES factors may vary across groups in their associations with other indicators of development (see Farruggia et al., 2004).

### **Summary and Goals of This Study**

The current body of research fails to present a clear picture regarding the applicability and dimensionality of the RSES for use with Latino adolescents. Current measurement studies either ignore method effects, rely on shortened or altered versions of the RSES, focus on adults or specific populations (e.g., women only, AFDC recipients, college students), or do not consider substantive differences in the putative subdimensions of the RSES. As a result, it is not clear to what extent researchers introduce error into studies of Latino youth when treating the RSES as a unidimensional scale. Researchers also may ignore potentially important differences in two elements of the RSES (self-deprecation vs. positive self-esteem) that may be more or less substantively meaningful for Latinos. Moreover, studies rarely consider measurement issues that consider cross-nationality and cross-generational status differences when studying Latino adolescents. To address these gaps in the literature, this study examined (a) the factor structure of the RSES with three samples of Latino adolescents, (b) the extent to which methods effects explain bidimensionality in the RSES within each sample, (c) and whether the RSES factor structure, items loadings, and patterns of association are similar across Latino subgroups (both with respect to parental country of origin and adolescent generational status). In addition, we also specify an a posteriori model to consider if relatively modest modifications to either the unidimensional or bidimensional model will result in good model fit. This latter goal is included because few studies have presented practical solutions to possible measurement issues with the RSES that consider more parsimonious and theoretically defensible CFA models.

### **Method**

#### *Participants and Procedures*

The sample for this study consisted of 814 adolescents in Grades 9 through 12 attending school in a large metropolitan area in southern California. Adolescents self-identifying as Mexican,

Salvadoran, and Guatemalan were included in this study as other possible nationalities had small sample sizes (e.g., Bolivia, Colombia). The study team acquired approval from schools and asked teachers to distribute and collect parental consent forms. Research assistants traveled to schools shortly thereafter to explain the project, distribute assent forms, and to administer questionnaires that students completed in school. Of the 814 Latino adolescents in the study, 73% were of Mexican origin, 18% Guatemalan, and 9% Salvadoran. The majority of respondents (66%) were born in the United States to parents who were themselves foreign born (91% of mothers and 93% of fathers). The sample was 59% female with an average age of 15. All of these respondents completed surveys in English, although 87% of respondents report speaking Spanish and only 28% indicated that English was the language most often spoken at home.

## Measures

*Self-esteem.* The RSES (Rosenberg, 1989) consists of 10 Likert-type scale items designed to assess positive evaluations of the self. Respondents indicate their level of agreement ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Cronbach's alpha for the full scale was .79 in these data. To be consistent with previous studies using the RSES, in this study the negatively worded items were reverse coded.

*Maternal behaviors.* The Parental Behavior Measure (Bush, Peterson, Cobas, & Supple, 2002) was used to assess youth reports of maternal support, monitoring, and psychological control. Mothers' support was assessed with four items (e.g., warmth, encouragement, praise), monitoring with six items, and psychological control with six items indicating adolescent perceptions of maternal coercion. Sample items included, "This parent seems to approve of me and the things I do" (support), "This parent knows how I spend my money" (monitoring), and "This parent tells me if I love her, I would do what she wants me to do" (psychological control). Cronbach's alphas in the current samples ranged from .78 to .90.

## Results

All analyses were conducted using AMOS 7.0. The first set of analyses assessed the factor structure (dimensionality) of the RSES by comparing the fit of several competing unidimensional and bidimensional models. These analyses were conducted separately by country-of-origin groups and also separately by generational status (U.S.-born adolescents compared with those born in Mexico, El Salvador, or Guatemala). Similar factor structures observed across groups provide evidence regarding configural invariance across those groups.

The second set of analyses considered the extent to which RSES items would demonstrate cross-group equivalence among the three country-of-origin subsamples. Comparing factor loadings and item means (intercepts) assessed the extent to which there is measurement equivalence across groups (Byrne, 2001). These same analyses were repeated to consider variation in item loadings and means across generational status.

The last set of analyses assessed a path model linking measures of maternal behaviors, generational status, age, and gender to two RSES subdimensions (positive self-esteem and self-deprecation). The purpose of these analyses was to consider whether two RSES subdimensions

are substantively distinct as evidenced by a different set of predictors. If a predictor, such as a parenting dimension, is found to predict only one element of self-esteem and not the other, one may argue that two RSES subdimensions tap into substantively distinct constructs. In addition, we tested the same model but with the RSES treated as a unidimensional construct to consider how study conclusions might change when considering a bidimensional model versus a unidimensional model.

The main analyses involved comparing alternative CFA models that vary in their specification of how RSES items relate to either one (the unidimensional model) or two (the bidimensional model) factors (the strategy outlined by Corwyn, 2000; Marsh, 1996 and Quilty et al., 2006). The two fundamental models include the unidimensional model (Model 1, see Figure 1) specifying all 10 RSES items as loading on a general self-esteem factor and the bidimensional model (Model 2) which specifies two factors. A significant improvement in fit of Model 2 over Model 1 would suggest that the RSES is better represented by a bidimensional factor structure. Subsequent models assess the extent to which a unidimensional model is found to fit when correlated error terms (uniquenesses) are included in the model for the positively or negatively worded items (Models 3 and 4, respectively). To the extent that unidimensional models with correlated uniquenesses provide the best fit to the data, there is evidence that any observed bidimensionality is due largely to method effects. We also considered an a posteriori model (Model 5) that included modifications to either unidimensional or bidimensional models (based on modification indices) leading to improved fit in a more subtle way (e.g., adding one correlated error rather than 5 to 10). Fit comparisons were made using standard indicators of model fit:  $\chi^2$ ,  $\chi^2$  per degrees of freedom, the Comparative Fit Index (CFI; acceptable values greater than .90, good fit greater than .95), and the root mean square error of approximation (RMSEA; acceptable less than .08, good fit < .05), as well as the Akaike's Informational Criteria (AIC, lower values indicate better fit).

### **[Figure 1 Omitted]**

Findings suggested that a two-factor model (Model 2) provided a better fit for the RSES items than did the unidimensional model (Model 1). Such a finding is consistent with previous research and suggests that the RSES is better specified as assessing two subdimensions rather than one. Across groups the bidimensional model did not, however, consistently demonstrate a good fit. While the bidimensional model demonstrated a good fit to the data in the Salvadoran and Guatemalan samples, all fit indices suggested a poor fit in the Mexican sample (see Table 1). Taken together, these findings suggest that while a bidimensional model with no correlated errors fits *better* than the unidimensional model (prior to taking into account any method effects), it only demonstrated a good fit in two of the three samples.

### **[Table 1 Omitted]**

The next two models, Model 3 and Model 4, were included to assess the extent to which method effects contributed to the poor fit of the unidimensional RSES model. Model 3 included correlations among the error terms associated with all positively worded RSES items. Fit statistics suggested that Model 3 was not a good fit for the Mexican sample but did demonstrate a good fit in both the Salvadoran and Guatemalan samples. Model 3 was clearly a superior fit

compared with Model 1 (the unidimensional model) but was not more well-fitting than Model 2 (the bidimensional model) in the Salvadoran and Guatemalan samples. Taken together, these findings suggest that across the three samples, method effects associated with the positively worded items are relatively modest and do not provide a better representation of RSES items than does the bidimensional model. Results associated with Model 4 (including correlated errors for negatively worded items), however, suggested that method effects related to the negatively worded items are fairly substantial. Model 4 demonstrated a good fit to the data in the Mexican and Salvadoran samples and also demonstrated the best fit of all models in the Guatemalan sample.

We also assessed an a posteriori (Marsh, 1996) model that was developed in an exploratory fashion based on modifications indices. The most parsimonious and well-fitting model found was a bidimensional model that included two correlated errors, both among residual errors associated with negatively worded items (between Items 9 and 10 and Items 6 and 7; see Table 2). This last model (Model 5) demonstrated the best fit in the Mexican and Salvadoran samples and also an excellent fit in the Guatemalan sample. In reference to model fit across generational status, for both U.S.-born and non-U.S.-born adolescents, the a posteriori model demonstrated the best fit although only slightly better than the negative items model. Overall evidence regarding factor structure was similar across generational status.

The next set of analyses considered measurement equivalence for the RSES items across the Mexican, Salvadoran, and Guatemalan samples. Analyses also considered measurement invariance across the U.S.-born respondents and those born in their family's country of origin. Cross-group equivalence analyses were based on a two-factor structure for the RSES (Model 5) and compared factor loadings and item intercepts (item means) across groups (Byrne, 2001). Such analyses are appropriate given that configural invariance (similar factor structure across groups) was demonstrated previously (Russell, Crockett, Shen, & Lee, 2008). A comparison of nested models that were increasingly constrained (starting with item loadings, then item intercepts, and onto correlations between the two RSES factors) suggested that each of these elements of the SEM model were invariant across all three groups. Chi-square comparison tests suggested that competing models were statistically indistinguishable and that we may conclude that factor loadings, item intercepts, and the correlated errors and correlations between the two RSES constructs were similar across the Mexican, Salvadoran, and Guatemalan samples. Identical analyses also suggested measurement invariance across the U.S.- and non- U.S.-born subsamples. Factor loadings were all moderate in magnitude and statistically significant. In each sample, the lowest factor loading corresponded to the "I wish I had more respect for myself" item.

### **[Table 2 Omitted]**

The last set of analyses considered an SEM path model where three adolescent reported maternal behaviors simultaneously predicted the two RSES subdimensions. Characteristics related to gender, age, and generational status were also included as predictors. An examination of the critical ratios (provided in AMOS output) allows for a test of whether associations between each predictor variable and each RSES subdimension are statistically different. Analyses were

conducted using the entire sample of Latino adolescents as preliminary analyses demonstrated invariant coefficients across the Mexican, Salvadoran, and Guatemalan samples.

### **[Table 3 Omitted]**

Results (see Table 3) suggested that path coefficients linking maternal support, monitoring, and adolescent gender with positive self-esteem were statistically similar to those paths linking these same predictors and self-deprecation. These findings suggest that adolescents reporting greater support and monitoring behaviors by mothers tend to score higher on self-esteem both in terms of greater positive feelings about the self and in terms of lowered negative self-assessments. Findings also suggested that gender differences exist in both RSES subdimensions and that the greater self-esteem reported for boys reflects both greater positive self-esteem and lower self-deprecation. Coefficients linking maternal psychological control, adolescent age, and generational status with positive self-esteem were statistically different, however, than associations between these same factors and self-deprecation. In each case, the coefficients related to self-deprecation were stronger. These findings suggest that adolescents experiencing higher psychological control by mothers may react more strongly by internalizing negative messages about the self (self-deprecation) than by reducing positive feelings about the self. Moreover, self-deprecation may be a more salient developmental outcome than is positive self-esteem in differentiating adolescents born in the United States versus those born in the family's country of origin. Last, older adolescents may react more to environmental cues by responding with self-deprecating behaviors than by lowered positive feelings about themselves.

The last analysis considered path coefficients originating from the same predictor variables (i.e., maternal behaviors, age, gender, and generational status) and linking to a unidimensional RSES construct. As the unidimensional model with no correlated errors would result in an ill-fitting SEM model, we used the negative correlated items model (Model 4). This analysis was conducted to demonstrate how findings might vary when employing a unidimensional RSES model with method effects taken into account. This model resulted in an adequate model fit ( $CFI = .92$ ,  $RMSEA = .05$ ) and produced path coefficients that were more similar (see Table 3) to those relating predictors to positive self-esteem. That is, predictions of the overall RSES using a negative correlated errors model are consistent with predictions of positive self-esteem and may underestimate psychological control, age, and generational status effects on self-esteem (particularly self-deprecation).

## **Discussion**

Findings from this study were consistent with previous research on the RSES. First, findings demonstrated that a bidimensional model was a better fit to these data than was a unidimensional model. Results also suggested that when method effects are observed, those effects tend to correspond to the negatively worded RSES items. Our findings were also consistent with previous studies suggesting that two putative RSES subdimensions differentially relate to theoretically related factors. Overall, these findings suggest that the RSES may be best operationalized as a bidimensional measure that taps into two related, yet substantively distinct constructs. The main implications of these findings relate to (a) how researchers should construct summary variables or latent factors when using the RSES, (b) theoretical discussions regarding

whether the RSES should be conceptualized as capturing global self-esteem or two elements of self-esteem that sometimes have different correlates, and (c) within Latino similarity in measurement properties when using the RSES with adolescents.

Findings of bidimensionality in the RSES call into question the strategy of averaging or summing together across RSES items. One recommended strategy in RSES studies would involve using SEM-based approaches to either specify two RSES factors or to specify a one factor RSES model that accounts for method effects in the negatively worded items. The former strategy would result in the ability to ascertain if contextual influences or other developmental outcomes have differential associations with positive versus negative self-esteem (Owens, 1994) while the latter strategy would result in a factor that more closely resembles the traditional conceptualization of self-esteem (Corwyn, 2000). Other possible strategies to avoid measurement error due to method effects include suggestions to rewrite RSES items so that all items are positively worded (Greenberger et al., 2003). Such a strategy, however, could simply result in error due to acquiescence bias (Corwyn, 2000). It is also possible to construct measures of self-esteem based solely on the five positively worded items, although with potential loss of content validity depending on the conceptualization of self-esteem. Regardless of the strategy employed, researchers should scrutinize the psychometric properties of the RSES in their own data rather than assuming unidimensionality or cross-cultural equivalence as the possibility exists that error is introduced (that may be especially pronounced with Latino adolescents) when researchers sum across all 10 RSES items (Quilty et al., 2006).

Other implications resulting from findings of bidimensionality in the RSES relate to conceptualizations of self-esteem (global vs. multiple dimensions) and the RSES. Whereas some researchers have continued to argue that the RSES is unidimensional (but biased due to method effects) and that global self-esteem as assessed by the RSES is a defensible theoretical construct (Corwyn, 2000), others have argued that bidimensionality in the RSES is tapping into substantively distinct factors, one that is indicative of greater positive feelings and one that assesses greater self-deprecating thoughts and that we should move toward theoretical models of self-esteem that include both of these elements of self-evaluation (Owens, 1993, 1994). Findings from this study support the latter argument as associations between psychological control, adolescent age, and generational status varied across positive self-esteem and self-deprecation. However, monitoring and support by mothers and adolescent gender were similarly associated to both positive self-esteem and self-deprecation. Such findings suggest that while support and monitoring by parents seems to associate equally with positive and negative feelings about the self, psychological control by mothers may have more of an adverse influence on self-esteem by increasing attitudes toward the self that emphasize negative feelings (rather than reducing positive feelings). In addition, boys score higher than girls on factors that assess both positive and negative (reversed items) self-appraisals while older adolescents and those adolescents born outside the United States may more heavily focus on elements of their self that are negative (compared with more positive) when forming their self-evaluations. An important implication for research with Latino adolescents is to consider how different aspects of the parent-child relationship may influence different aspects of self-esteem and also that U.S.-born Latino youths may be more sensitive to negative feelings toward the self than are adolescents who emigrated to the United States.

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## **Bios**

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