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MEASUREMENT EQUIVALENCE OF NEIGHBORHOOD QUALITY MEASURES FOR EUROPEAN AMERICAN AND MEXICAN AMERICAN FAMILIES

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Abstract

The factorial and construct equivalence of subscales assessing parents' and children's perceptions of the quality of their neighborhood was examined in Mexican American and European American families. All subscales (dangerous people in the neighborhood, sense of safety in the neighborhood, quality of the physical environment) demonstrated adequate partial factorial invariance across English- and Spanish-speaking Mexican American and European American families. Reports by children about dangerous people in the neighborhood was the closest to achieving strict factorial invariance, and the only one of the four dimensions to achieve invariance in the validity analyses across Mexican American and European American families. The implications of using these self-report neighborhood quality measures in studies of multiple cultural or language groups are discussed.

In the past decade, researchers have become increasingly interested in the effects of neighborhood context upon the lives of children and families. The use of contextual and ecological frameworks, which stress person-environment interactions and contextual influences on individual and family outcomes (Bronfenbrenner, 1981), has resulted in a body of extant literature that links certain neighborhood characteristics to a host of negative outcomes. For example, research with European American and African American families demonstrates that neighborhood quality is related to school readiness and achievement, dropout rates, delinquency, and behavioral problems, even after controlling for family characteristics such as income and education (Elliot et al., 1996; Furstenberg, Cook, Eccles, Elder, & Sameroff, 2000). Together, these studies suggest that children who live in neighborhoods in which indicators of disadvantage or disorder are high run a greater risk of becoming involved in misconduct and delinquent behaviors than do their peers in safer and more prosperous neighborhoods.

Methodological and sampling problems have plagued much of the research on neighborhoods, leaving many questions regarding how neighborhoods can be salient sources of risk and protection for children and families (Roosa, Jones, Tein, & Cree, 2003). For example, because the majority of these studies used samples of European American and African American descent, the generalizability of the findings to Latino populations is not well known. It is thus critical to address the psychometric properties of neighborhood quality measures for the Latino population.

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Mexican Americans are the largest Latino group in the United States, accounting for about 60% of the Latino population (U.S. Census Bureau, 2001). Mexican Americans have the second highest rates of poverty among Latinos in the United States, behind Puerto Ricans (U.S. Census Bureau, 2003), the highest drop-out rate, and increased levels of academic difficulties compared to both the majority population and other minority groups (U.S. Department of Education, 2000). The high number of Mexican Americans living in low-income neighborhoods, combined with elevated prevalence rates for negative outcomes in these neighborhoods, suggests that it is important for researchers to understand how neighborhood characteristics affect the lives of Mexican American families. Before doing so, it is important to establish that measures of neighborhood quality are equivalent for both Spanish- and English-speaking Mexican Americans, as well as for English-speaking European Americans.

Tests of measurement equivalence provide a mechanism by which researchers can establish whether a measure is similarly reliable and valid across different ethnic and language groups (Knight & Hill, 1998). There are at least two mechanisms by which the equivalence of neighborhood measures in Latino populations may be compromised: (a) differences in experiences related to one's personal historical background, and (b) translation issues. The purpose of the present study was to examine the psychometric properties of a self-report measure of neighborhood quality to determine the degree to which it is equivalent across ethnic and language groups.

Using measures that demonstrate equivalence provides assurance that the research findings represent effects that are due solely to the construct of interest and not to other sources, such as measurement error. Lack of measurement equivalence calls into question the validity of results obtained for different ethnic/cultural and language groups (Knight & Hill, 1998). For example, the construct of neighborhood quality could vary across groups if different groups conceive of neighborhood quality dissimilarly and use different indicators to assess it (Crockett, Randall, Shen, Russell, & Driscoll, 2005). Thus, a measure developed using samples of primarily European Americans and African Americans may not address the salient features of this construct for another group. In addition, even if different groups conceptualized the construct in similar ways, the items used in assessment may be better indicators of the construct of interest for one group than another (Crockett et al., 2005). If measures are nonequivalent, it is difficult to determine whether similarities or differences observed in neighborhood quality scores across different groups reflect true findings in the underlying construct or whether they are a result of measurement bias (Knight, Virdin, & Roosa, 1994). This would suggest that any policy or intervention strategies based upon potentially inaccurate information would likely be ineffective in achieving the desired change (Crockett et al., 2005).

ETHNIC DIFFERENCES IN PERCEPTIONS OF NEIGHBORHOODS

Variations in personal and cultural histories may affect individuals' perceptions of their surroundings, thereby contributing to variance across groups. Mexican American culture has been characterized as more interdependent and collectivist than mainstream European American culture (Markus & Kitayama, 1991). This may mean that the standards according to which neighbors are judged to be "getting along," for example, may differ for someone who bases interpretations on a collectivistic perspective compared to someone who sees individuals as more independent. That is, a Mexican American family, valuing interdependence, may expect community solidarity to be evidenced by intimate personal connections among all members of the community and by a shared sense that group togetherness is more important than individual gain (Triandis, Bontempo, Villareal, Asai, & Lucca, 1988). In contrast, a European American family, valuing independence and autonomy, may not have such high expectations for community and therefore may interpret less personal and more detached interactions as evidence of community solidarity.

TRANSLATION

Translation of measures to other languages is another factor that could explain differences in ratings of neighborhoods across groups. Although problems in translations may arise, it is nevertheless important to have translated measures. Over 75% of Hispanics reported speaking a language other than English at home, with 99% of these persons reporting Spanish as the language spoken at home, and approximately 40% of all Hispanics report speaking English less than "very well" (U.S. Census Bureau, 2000). Thus, given the significant portion of the U.S. Latino population using Spanish as their primary language, measures need to be translated for use with many Latinos. Even when great care is taken to use experienced bilingual translators who follow the recommended steps for translating and back-translating measures, subtle semantic differences often remain (Foster & Martinez, 1995). Whenever a measure is translated to a second language, there is a possibility that differences in observed scores across language groups could be due to translation problems because of unsuspected differences in transportability of the meaning across languages.

OBJECTIVE AND SUBJECTIVE MEASURES OF NEIGHBORHOOD

Census data have been used as the most common objective indicators of neighborhood quality (Leventhal & Brooks-Gunn, 2000; Roosa et al., 2003). Across studies that use census data, neighborhood economic status, diversity, and residential stability have been the dimensions most frequently used as indicators of neighborhood disadvantage. Although census data may adequately assess these structural aspects of neighborhood quality, the more social aspects of neighborhood—such as cohesion, or feelings about neighborhood qualities—cannot be assessed using such variables (Leventhal & Brooks-Gunn, 2000; Roosa et al., 2005). Social disorganization theory (Sampson & Groves, 1989; Shaw & McKay, 1942) suggests that structural and social aspects of neighborhood are theoretically linked constructs. That is, studies have indicated that people's perceptions of community affluence and danger are related to objective characteristics of socioeconomic status, racial composition, and population age (Liska, Sanchirico, & Reed, 1988; Logan & Collver, 1983). Such findings suggest that researchers should assess both objective and subjective features of neighborhood quality.

Approaches to Establishing Equivalence

A number of approaches to the assessment of cross-group or cross-ethnic equivalence of measures have been described in the extant literature (Millsap, 1997; Widaman & Reise, 1997). These varied approaches have focused upon two critical elements in the assessment of cross-ethnic equivalence of measures: the degree of similarity of the internal structure of a measure across ethnic groups (factorial invariance) and the degree of similarity in the construct validity of a measure (construct validity equivalence).

Factorial invariance—Factorial invariance can be assessed by using multigroup confirmatory factor analysis (CFA) to fit a series of hierarchically nested factor structures (Knight & Hill, 1998; Millsap & Kwok, 2004; Widaman & Reise, 1997). The sequence of nested CFA models tested (configural, metric, strong, and strict) progresses from the least restrictive to the most restrictive model of invariance.

Configural invariance is established if a CFA model that allows the same set of items to form a factor in each group shows good model fit. If configural invariance exists, the items are a good representation of the construct in each group. Metric invariance exists if the strength of the relationship (i.e., factor loading) between each item and the latent construct under consideration is invariant across groups. A strong invariance exists with similarity of the item intercepts across groups. Items that do not meet criteria for invariance in factor loadings are exempt from the test of invariance in item intercepts (Millsap, 1997). Finally, strict invariance

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adds a test of the similarity of the unique error variances associated with each item across groups. At all levels of invariance, a partially invariant model may be obtained if some, but not all, items are invariant on each element of the factor structure across groups (Byrne, Shavelson, & Muthen, 1989).

Construct validity equivalence—Following the tests of factorial invariance, construct validity equivalence is established by examining the similarities of the slopes and intercepts of the relation of the latent construct to other theoretically related constructs across ethnic/language groups. Equivalence in slopes is established by comparing the fit indices for a structural model in which the slopes are freely estimated across groups (i.e., unconstrained) to a model with constrained slopes. If the constrained slope model is satisfactory, then equivalence in intercepts is imposed. Achieving equivalence in slopes and intercepts suggests that a given score on a construct shows the same level of association to a theoretically meaningful construct for members of different groups, and thus establishes construct validity equivalence. Knight and colleagues (Knight & Hill, 1998; Knight, Tein, Prost, & Gonzales, 2002) have suggested that this type of functional equivalence is the most useful way to demonstrate that any scale score (or latent construct value) indicates the same degree, intensity, or magnitude of the construct across groups.

Present Study

The present study examines the equivalence of a self-report neighborhood measure, the Neighborhood Quality Evaluation Scale (NQES), for three groups. Our analyses are designed to address how well the same items assess the concept of neighborhood quality for each of these groups. Construct validity is then established by investigating whether objective indicators of neighborhood quality from census data are similarly related to subjects' self-reported ratings on the NQES across the three groups in the study.

METHOD

Participants

Participants in this study were 434 European and Mexican American mothers and their children. This included 66 European American mothers (66 youth), 123 Mexican American English-speaking mothers (294 youth), and 245 Mexican American Spanish-speaking mothers (74 youth). There were significant differences in mean levels for mothers' reports of per capita income, F (2,431) = 47.543, p<.01. Mexican American English-speaking families earned significantly more per capita income ($11,623) than the European American families ($8,354), who earned significantly more that the Spanish-speaking Mexican American Families ($5,133). The per capita income difference between the Mexican American English-speaking families and the European American families was largely a function of the smaller percentage of two-parent families in the latter group (80% vs. 50% two-parent families). Additionally, mean levels of mothers' total years of schooling was significantly different across groups, F (2,431) = 57.649, p<.001. Mexican American Spanish-speaking mothers (M = 9.00) had a significantly lower number of years in school than both Mexican American English-speaking mothers (M = 12.44) and European American mothers (M = 12.18); there were no significant differences between the two English-speaking groups. Child participants in the study ranged in age from 8 to 14, spanning grades 4 through 7, with an average age of 11.5 years. There were significant differences in average age of child across groups, F (2,431) = 50.798, p<.00. The average age for Mexican American Spanish-speaking children (11.3 years) was significantly different from the average age of both the Mexican American English-speaking children (11.9 years), and the European American children (10.2 years); the age difference between the two English-speaking groups was also significant.

Participants for this study came from two separate studies conducted in a large metropolitan area in a southwestern state. Participants in Study 1 were Mexican American or European American families. Students in fourth, fifth, or sixth grade (and their primary caregivers) were randomly selected from school rosters in an inner-city school district that served an ethnically and linguistically diverse, but primarily low-income, population (80% of students were eligible for free lunches; Roosa et al., 2005). Study 2 recruited solely Mexican American families, by targeting seventh-grade students (and their families) from middle/junior high schools throughout a large metropolitan area in a southwestern state (Updegraff, McHale, Whiteman, Thayer, & Delgado, 2005). Both studies used similar recruiting, sampling, and interviewing protocol. The main difference between the two studies is child's age: the first study sampled children in grades 4-6; the second sampled children in the seventh grade only. Because an abbreviated description of the methodology and sample for each study is described, the reader is referred to the original studies for further details (Roosa et al., 2005; Updegraff et al., 2005).

Procedures

Recruitment—In Study 1, a multistage systematic random sampling procedure was used, in which 806 families were selected for recruitment (75% of the original school roster of students). Of the families selected for recruitment, 122 families (15%) were found ineligible to participate based on screening criteria, and 316 (39%) could not be located, resulting in a total of 368 eligible families. Of those eligible for interviews, 188 (51%) agreed to participate and completed interviews and 180 (49%) refused to participate. In Study 2, names of families were obtained from 10 schools representing a range of socioeconomic situations, with the proportion of students receiving free/reduced lunch varying from 8% to 82% across schools. Screening and recruitment resulted in 421 eligible families. Of those eligible for interviews, 246 (58%) agreed to participate and completed interviews, 95 (23%) refused, 42 (10%) who were eligible were unable to be recontacted to determine if they would participate, and 38 (9%) agreed, but did not participate. Overall, recruitment and screening resulted in similar participation rates across Study 1 and Study 2 (51% and 58%, respectively).

Interview protocol—For both Study 1 and Study 2, both mother and target child had to agree to participate in the interviews for a family to be eligible for participation. Once agreement was obtained, in-home assessments were scheduled and conducted by trained interviewers. All interviews were administered using laptop computers. The interviewers read each survey question and possible response aloud in the participants' preferred language to reduce problems related to variations in literacy levels. In Study 1, families were paid $50 for participation; in Study 2, which included two parents and two children, each family received $100 for their participation.

The translation of measures followed Brislin's (1986) recommendation. That is, the measures were first translated into Spanish by one bilingual translator and then back-translated into English by a second bilingual translator. Conferences between the translators and members of the research team were held to resolve any discrepancies between the original English version and the back-translated version.

Measures

Neighborhood Quality Evaluation Scale—The Neighborhood Quality Evaluation Scale (NQES) was developed by Roosa et al. (2005) by selecting items from existing measures of neighborhood quality (Aneshensel & Sucoff, 1996; Bowen & Chapman, 1996; Cutrona, Russell, Hessling, Brown, & Murry, 2000; Elliot et al., 1996; Perkins et al., 1990; Ross & Jang, 2000; Shumow, Vandell, & Posner, 1998). Items that required residents to evaluate aspects of the neighborhood rather than simply report on objective characteristics were included in the

NQES. Respondents rated their levels of agreement to items, ranging from (1) *strongly agree* to (4) *strongly disagree* (see Appendix for items in English and Spanish). The NQES asked respondents to rate neighborhood quality as it related to neighborhood safety, dangerous people, and physical characteristics. Sample items include “My neighborhood is clean and attractive” (physical environment, five items, α = .76-.87 across groups), “My neighborhood is safe for children during the daytime” (neighborhood safety, four items, α = .72-.79 across groups), and “I worry about people with guns and knives in my neighborhood” (dangerous people, five items, α = .70-.79 across groups). Using a scale range of (1) *totally true* to (5) *totally false*, the target child also rated similar items (four in total) related to dangerous people in the neighborhood (α = .72-.76 across groups).

Census data—Archival data from the 2000 Census was used to provide objective indicators of neighborhood quality at the block group level. Neighborhood disadvantage was represented by the percentage of families in poverty, percentage White, percentage foreign-born, and percentage not living in same household since 1995 (e.g., Sampson, Raudenbush, & Earls, 1997; Simons, Johnson, Beaman, Conger, & Whitbeck, 1996).

RESULTS

The factorial invariance and validity analyses were conducted using Mplus software (Muthen & Muthen, 2004) because it allowed for an estimation of parameter values while taking into account the clustered nature of the data, as multiple individuals in the study reported on the same neighborhood block group. For all invariance models, model fit is considered good if the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI) are above .95, the Root Mean Square Error of Approximation (RMSEA) is below .05, and the Standardized Root Mean Square Residual (SRMR) is below .08 (Hu & Bentler, 1999). The chi-square difference test is also used to compare two hierarchically nested CFA models. Results of the tests of factorial invariance are shown in Table 1 and a summary of the results is shown in Table 2.

Factorial Invariance Analyses of Neighborhood Quality Measures

Child report of dangerous people—Items comprising children’s reports of dangerous people were invariant across groups at the configural, metric, and strong levels. A strict invariance model was not tenable. A partially strict invariance model was supported by freely varying Item 1 in the Mexican American English-speaking group.

Mother report of dangerous people—Mothers’ reports of dangerous people in the neighborhood also demonstrated configural, metric, and strong invariance across groups. Because a strict invariance model did not have an acceptable fit for this subscale, a partially strict invariance model was adopted. In this model 9a (please see Table 2 for the items that were allowed to vary freely for this model), for at least two items, it appeared that there may be a translation issue involved. For Items 5 and 9, the word “worry” in English was translated as “preoccupied” in the Spanish version. The term “preoccupied” in Spanish may be considered to be more serious than the term “worry” is in English. Researchers commonly allow error terms to freely vary in this manner to achieve an acceptable model fit. Because these are error terms, having theoretically driven rationale to allow them to vary across groups is less important than it would be if these were item loadings or intercepts. Overall, based on the results of the metric and strong invariance models, it appears that the factor loadings and item intercepts are similar across groups. A *partially* strict invariance model was supported, suggesting that a handful of the unique factor variances vary widely across the three groups under comparison for this subscale.

Mother report of sense of safety—Mothers' reports of sense of safety achieved configural, metric, and strong invariance across three groups. Because the strict invariance model was not tenable, a partially strict invariance model was tested. Four out of 12 unique factor variances were allowed to vary freely across groups (see Table 2 for the specific items), achieving a partially strict invariance model that adequately represented the data.

Mother report of physical environment—The fit indices for the configural invariance model of the quality of the physical environment as reported by mothers showed adequate fit. A metric invariance model was not tenable, and thus a partial metric invariance model was proposed, where Item 17 in Mexican American English-speaking families was allowed to vary freely. This same item was allowed to vary across groups in the partially strong invariance model and showed adequate model fit. In arriving at the partially strict invariance model, the same Item 17 was allowed to vary freely in the Mexican American Spanish-speaking group. Because the fit indices indicated that freeing only this item did not show adequate representation of the data, Item 18 was also allowed to vary freely for the Mexican American Spanish-speaking group to arrive at a well-fitting partially strict invariance model. These items were selected to vary freely across groups because of differences in translation and because they appeared to be most vulnerable to cultural differences. In Item 17, the translation of a run-down home in Spanish was "maltratar," or mistreated, which carries a more negative connotation than "run-down" does in English. In addition, what constitutes taking "good care" of homes (Item 18) is likely influenced by respondents' social class; in general, Mexican American Spanish speakers had lower education and income levels than the other groups.

Construct Validity Analyses of the Neighborhood Quality Measures

The next set of analyses, which examined the invariance in the relationships between the neighborhood quality subscales and theoretically related constructs, is shown in Table 3, with a summary appearing in Table 4. The dangerous people subscale as reported by children demonstrated invariant slopes and intercepts for all census variables between Mexican American English-speaking and European American groups. There were also invariant slopes and intercepts between Mexican American Spanish-speaking and European American groups for two of the census variables (see Table 4 for specific variables). With the exception of one comparison, slope invariance was also shown in the remaining group comparisons.

The dangerous people subscale as reported by mothers showed invariant slopes and intercepts between Mexican American Spanish-speaking and European American English-speaking groups for three of the census variables (see Table 4 for specific variables). Slope invariance was also demonstrated in five of the nine remaining group comparisons.

The sense of safety subscale as reported by mothers showed invariant slopes and intercepts between Mexican American English-speaking and Mexican American Spanish-speaking groups for three of the census variables (see Table 4 for specific variables). Slope invariance was also demonstrated in five of the nine remaining group comparisons.

For the physical environment subscale as reported by mothers, invariant slopes and intercepts were demonstrated between Mexican American English-speaking and European American English-speaking groups for three of the census variables, and between Mexican American English-speaking and Mexican American Spanish-speaking groups for one of the census variables (see Table 4 for specific variables). Slope invariance was also demonstrated in one of the seven remaining group comparisons.

Overall, it appears that the report of dangerous people by children was closest to meeting the criteria for strict factorial invariance and was also the closest to meeting equality of validity coefficients across all three groups. The remaining measures for mothers showed partially strict invariance. For tests of similarity of validity coefficients across groups, the neighborhood quality measures as reported by mothers resulted in a complex pattern of results. None of these measures showed equivalence of validity coefficients as strongly as that shown for children's reports of dangerous people in the neighborhood.

DISCUSSION

Accumulating evidence suggests that neighborhood risk plays an important role in child and family functioning and well-being. The growing ethnic and linguistic diversity of America's families and children indicates that neighborhood quality measures are being used with an increasingly heterogeneous population. Therefore, it is important to demonstrate measurement equivalence (i.e., comparable factor structure and construct validity coefficients based upon cultural awareness) of such measures across groups because this would indicate that items assessing the construct are measuring the same construct across language and ethnic groups. If the psychometric properties are not invariant across groups when such invariance is expected, any differences one may observe across language and ethnic groups may be due to measurement bias rather than to true differences across groups. The present investigation focused on examining the factor structure and construct validity of several subscales designed to assess the quality of one's neighborhood for both English-speaking and Spanish-speaking Mexican Americans, as well as in English-speaking European American families. The study tested three neighborhood quality subscales for use with mothers (i.e., dangerous people, sense of safety, and physical environment) and one subscale (i.e., dangerous people) for use with children.

Results from factorial invariance analyses revealed that children's perceptions of neighborhood danger were closest to achieving similarity across groups. Mothers' perceptions of neighborhood quality, on the other hand, showed more varying degrees of differences across language and ethnic groups. For the dangerous people and sense of safety subscales, the item factor loadings and the average levels of items were similar across the three groups, but error terms associated with the items did show some dissimilarities across groups. For the physical environment subscale, the strength of the relationship between the item and the construct was dissimilar across groups. Because this lower level of factorial invariance could not be achieved, a partial metric invariance model was favored. Overall, it appeared that of the three neighborhood subscales for mothers, the physical environment subscale was the least invariant across groups, while the dangerous people and sense of safety subscales demonstrated greater levels of factorial invariance across groups.

These results of the construct validity analyses parallel the findings of the factorial invariance analyses. Specifically, the construct validity analyses demonstrated that, of the four subscales in the study, children's reports of dangerous people in the neighborhood showed the greatest level of construct validity invariance across groups.[1] Also paralleling the factorial invariance analyses, similar levels of construct validity invariance were achieved for the dangerous people and the sense of safety subscales, as both subscales achieved a strong level of invariance. The final subscale, mothers' reports of physical environment, demonstrated the lowest level of invariance across groups and the construct validity analyses indeed demonstrated that this subscale showed the lowest level of construct validity invariance across groups.

[1]Even though the Mexican American children were slightly older than the European American children, the observed factorial invariance and construct validity invariance suggest that this is not likely an important consideration. The findings indicate a great deal of similarity in the item loadings and intercepts in the factorial invariance analyses, and a great deal of similarity in the slopes and intercepts of the construct validity analyses. This suggests considerable measurement equivalence across both these ethnic groups in this relatively small age range. In fact, there was less evidence for measurement equivalence in reports by mothers, where child age was not a factor, than in reports by children.

The lack of factorial invariance for some of the items that were problematic according to the analyses could be attributable to difficulties in translation or differences in personal backgrounds. For some items in the measure, it was difficult to achieve the same meaning for English words such as “worry” and “run-down” in Spanish. For example, because of the colloquial use of the term “run-down” in the United States, it was quite difficult to convey this meaning in a comparable way for our Spanish-speaking participants. Hence, the Spanish equivalent of “maltratar”, or mistreat, may not have conveyed precisely the same meaning. Further, it is important to note that items that may have caused problems in the equivalence in meaning across adult groups did not necessarily cause similar problems across child groups. It may be that the Spanish-speaking children in this study were more bilingual or bicultural than their mothers and because of this, were better able to determine the intent of some of the items that were problematic for their mothers.

The observed ethnic and language differences in factor structure and/or construct validity relations could be a function of differences in social classes, or to more urban versus more rural backgrounds, across these subsets of the sample. For example, people with more limited financial resources may have different priorities with regard to what constitutes “good care” of a home, favoring more functional qualities of a home (i.e., protection from the elements) with less consideration of more aesthetic qualities of a home (i.e., condition of the exterior paint). Indeed, socioeconomic status is a critical construct that researchers should consider when examining ethnic group differences and similarities. There are some questions as to the plausibility of disentangling social class from culture. Harrison, Wilson, Pine, Chan, and Buriel (1990) argue that extended kin networks, more common among ethnic minority families, represent a specific cultural adaptation to the economic and personal challenges these families face in the United States. Thus, although differences related to socioeconomic background may result in nonequivalence across groups, we suggest that insofar as socioeconomic status represents a component of cultural background, it may not be plausible to separate these two influences in an ethnic comparative design. The difficulty of separating out the influence of socioeconomic status and culture is indeed a limitation of the existing literature attempting to compare Spanish-speaking and English-speaking Mexican Americans.

SUMMARY

In light of the study findings, the following recommendations can be made. First, the dangerous people subscale as reported by children could be used in both between- and within-group research designs involving English- and Spanish-speaking Mexican American and European American families. Second, reports by mothers regarding dangerous people and sense of safety in the neighborhood could be used in within group research designs. Third, reports by mothers of physical environment should be used cautiously only within groups, and potentially only with English speakers or people of middle-class socioeconomic status. Because of the severe limitations posed by this scale, researchers should consider not using this subscale at all and should begin to develop self-report assessments of the physical environment that are functional in different social class groups as well as across language groups.

In the future, researchers who work with populations that are not English speaking must not only take great care in ensuring the accurate translation of their measures, but also consider personal historical experiences of their participants that may bias the interpretation of items in measures. Further, this study suggests that the standard translation/back-translation practices may not be sufficient, in and of themselves, for generating cross-language equivalence of measures used to assess psychological and social science constructs. Clearly, analyses similar to those reported here should be used to augment translation procedures.

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APPENDIX

Neighborhood Quality Measures in English and Spanish

Item	*Dangerous people: Child report*	
1	Drug dealers are a problem in my neighborhood.	Los vendedores de drogas son un problema en mi vecindario.
2	I am scared of gangs in my neighborhood.	Les tengo miedo a las pandillas en mi vecindario.
3	There are people in my neighborhood who might hurt me.	Hay gente en mi vecindario que puede lastimarme.
4	I worry about people with guns and knives in my neighborhood.	Me preocupo de gente con pistolas y navajas en mi vecindario.
Item	*Dangerous people: Mother report*	
5	I worry about people with guns and knives in my neighborhood.	Me preocupo de gente con pistolas y navajas en mi vecindario.
6	People in this neighborhood do not get along with each other.	Las gentes de ésta vecindario no se llevan bien los unos con los otros.
7	Drug dealers are a problem in my neighborhood.	Los vendedores de drogas son un problema en mi vecindario.
8	There are people in my neighborhood who might hurt me.	Hay gente en mi vecindario que puede lastimarme.
9	I worry about the kind of people my children will meet in this neighborhood.	Me preocupo del tipo de gente que mis hijos puedan conocer en éste vecindario.
Item	*Sense of safety: Mother report*	
10	My neighborhood is safe for children during the daytime.	Mi vecindario es seguro para los niños durante el día.
11	My neighborhood is safe for children during the nighttime.	Mi vecindario es seguro para los niños durante la noche.
12	It is safe in my neighborhood.	Mi vecindario es seguro.
13*	I do not feel safe walking to the school, park, or store in this neighborhood.	En mi vecindario, no me siento seguro caminando a la escuela, al parque, o a la tienda.
Item	*Physical environment: Mother report*	
14	My neighborhood is clean and attractive.	Mi vecindario es limpio y atractivo.
15*	My neighborhood is noisy.	Mi vecindario es ruidoso.
16	I think this neighborhood is a good place to live.	Yo pienso que mi vecindario es un buen lugar para vivir.
17*	There are lots of run down homes in our neighborhood.	Hay muchas casas maltratadas en mi vecindario.
18	People in my neighborhood take good care of their homes and property.	La gente en mi vecindario cuida muy bien sus casas y su propiedad.

*Reverse coded.

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Table 1

Confirmatory Factor Analytic Model of Factorial Invariance Tests Across Mexican American English, Mexican American Spanish, and European American English Groups

Model		χ^2	*df*	*p-Value*	*Δdf*	$\Delta\chi^2$	$\Delta\chi^2$ *p-Value*	*CFI*	*TLI*	*RMSEA*	*SRMR*
	Dangerous people: Child report										
1	Configural invariance model (final configural invariance model)	13.84 (15.33)	6	0.03				0.97	0.92	0.10	0.03
2	Model 1+all factor loadings invariant (final metric invariance model)	18.61 (21.72)	12	0.10	6	5.21[a]	0.52	0.98	0.97	0.06	0.05
3	Model 2+all measurement intercepts invariant (final strong invariance model)	22.78 (26.34)	18	0.20	6	4.07	0.67	0.98	0.98	0.04	0.05
4	Model 3+all unique variances invariant (strict invariance model)	54.95 (54.66)	26	0.00	8	44.87	0.00***	0.90	0.93	0.09	0.09
5	Model 3+some unique variances invariant (final partially strict invariance model)	41.00 (42.46)	25	0.02	7	22.22[b]	0.00**	0.95	0.96	0.07	0.08
	Dangerous people: Mother report										
6	Configural invariance model (final configural invariance model)	20.42 (23.45)	15	0.16				0.98	0.96	0.05	0.04
7	Model 6+all factor loadings invariant (final metric invariance model)	30.95 (32.85)	23	0.12	8	10.46	0.23	0.97	0.96	0.05	0.07
8	Model 7+all measurement intercepts invariant (final strong invariance model)	45.33 (49.28)	31	0.05	8	14.15	0.08	0.95	0.95	0.06	0.07
9	Model 8+all unique variances invariant (strict invariance model)	92.57 (120.17)	41	0.00	10	36.31	0.00***	0.82	0.87	0.09	0.18
9a	Model 8+some unique variances	48.63 (60.73)	37	0.10	6	5.49[c]	0.48	0.96	0.97	0.05	0.09

		χ^2	*df*	*p-Value*	Δdf	$\Delta\chi^2$	$\Delta\chi^2$ *p-Value*	*CFI*	*TLI*	*RMSEA*	*SRMR*
	invariant (final partially strict invariance model)										
	Sense of safety: Mother report										
10	Configural invariance model (final configural invariance model)	7.87 (11.98)	6	0.25				0.99	0.98	0.05	0.03
11	Model 10+all factor loadings invariant (final metric invariance model)	12.86 (18.54)	12	0.33	6	4.82	0.57	0.99	1.00	0.01	0.06
12	Model 11+all measurement intercepts invariant (final strong invariance model)	33.96 (44.79)	18	0.01	6	24.46	0.00***	0.94	0.94	0.08	0.07
13	Model 12+all unique variances invariant (strict invariance model)	61.40 (88.05)	26	0.00	8	25.55	0.00**	0.87	0.91	0.10	0.19
13a	Model 12+some unique variances invariant (final partially strict invariance model)	32.95 (47.53)	22	0.06	4	1.37[d]	0.85	0.96	0.97	0.06	0.09
	Physical environment: Mother report										
14	Configural invariance model (final configural invariance model)	32.84 (43.01)	15	0.00				0.97	0.94	0.09	0.04
15	Model 14+all factor loadings invariant (metric invariance model)	48.13 (59.31)	23	0.00	8	14.99	0.06	0.96	0.94	0.09	0.10
15a	Model 14+some factor loadings invariant (final partially metric invariance model)	43.57 (52.72)	22	0.04	7	9.74[e]	0.20	0.96	0.95	0.08	0.08
16	Model 15a +measurement intercepts invariant[g] (final partially strong invariance model)	51.76 (59.88)	29	0.01	7	7.23	0.41	0.96	0.96	0.07	0.08

		χ^2	*df*	*p-Value*	Δdf	$\Delta\chi^2$	$\Delta\chi^2$ *p-Value*	*CFI*	*TLI*	*RMSEA*	*SRMR*
17	Model 16+all unique variances invariant (partially strict invariance model)	76.18 (94.19)	39	0.00	10	23.39	0.01**	0.93	0.95	0.08	0.12
17a	Model 16+some unique variances invariant (final partially strict invariance model)	64.07 (77.96)	36	0.00	7	12.34[f]	0.09	0.95	0.96	0.07	0.08

Note. χ^2 values for clustered (non-clustered) models in MPLUS; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual.

[a]Each chi-square difference test refers to a comparison of the fit of the current model with the immediately preceding model, except where noted by superscripts b through f. For the chi-square difference testing, because of the MLR estimation method; the Satorra-Bentler scaled chi-square statistic is used, which corrects for the scaling factor.

[b]Compares models 3 and 5.

[c]Compares model 8 and 9a

[d]Compares model 12 and 13a.

[e]Compares model 14 and 15a.

[f]Compares model 16 and 17a.

[g]Invariance in intercepts is specified only for those items that demonstrate invariant factor loadings as suggested by Millsap (1997).

* $p<.05$

** $p<.01$

*** $p<.001$.

Table 2

Summary of Measurement Invariance

Subscales	*Levels of Invariance*			
	Configural	*Metric*	*Strong*	*Strict*
Dangerous people: Child report	Yes	Yes	Yes	Partial[a]
Dangerous people: Mother report	Yes	Yes	Yes	Partial[b]
Sense of safety: Mother report	Yes	Yes	Yes	Partial[c]
Physical environment: Mother report	Yes	Partial[d]	Partial[e]	Partial[f]

Note. MAE = Mexican American English; MAS = Mexican American Spanish; EAE = European American English

[a] Unconstrain unique variance for Item #1 in MAE.

[b] Unconstrain unique variances for Items #5, 7, and 9 in MAS and Item #6 in EAE.

[c] Unconstrain unique variances for Item #11 in MAE, #12 in MAS, #10 and #13 in EAE.

[d] Unconstrain factor loading for Item #17 in MAE.

[e] Unconstrain Items #17 MAE and #18 in MAS.

[f] Unconstrain Items #17 and #18 in MAS.

Table 3

Standardized Estimates from Validity Coefficient Invariance Analyses for Percentage White, Percentage Foreign Born, Percentage Same Household Since 1995, and Percentage of Families Living in Poverty Across Mexican American English, Mexican American Spanish, and European American English Groups

		Δdf	$\Delta\chi^2$	Slopes			Intercepts		
				MAE	***MAS***	***EAE***	***MAE***	***MAS***	***EAE***
Dangerous people: Child report									
Percentage foreign born									
1	Freely estimate slopes and intercepts								
2	Invariant slopes (all groups)	2	9.80**	0.35	0.08	0.01	1.98	3.28	2.56
3	Invariant slopes and intercepts (MAE and EAE)	2[a]	0.00						
4	Invariant slopes and intercepts (MAS and EAE)	2[b]	3.41						
Percentage same household since 1995									
	Freely estimate slopes and intercepts			-0.15	-0.06	-0.28	2.95	3.63	3.35
5	Invariant slopes (all groups)	2	1.40						
6	Invariant slopes (all groups) and intercepts (all groups)	2	24.80***						
7	Invariant slopes (all groups) and intercepts (MAE and EAE)	1[c]	0.55						
8	Invariant slopes (all groups) and intercepts (MAS and EAE)	1[d]	3.79						
Percentage White									
9	Freely estimate slopes and intercepts								
10	Invariant slopes (all groups)	2	4.11	-0.32	-0.02	-0.41	3.96	3.53	3.79
11	Invariant slopes (all groups) and intercepts (all groups)	2	15.46***						
12	Invariant slopes (all groups) and intercepts (MAE and EAE)	1[e]	0.14						
Percentage of families living in poverty									
13	Freely estimates slopes and intercepts								
14	Invariant slopes (all groups)	2	3.61	0.42	0.11	0.38	1.96	3.20	1.93

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				Slopes			Intercepts		
		Δdf	$\Delta\chi^2$	*MAE*	*MAS*	*EAE*	*MAE*	*MAS*	*EAE*
15	Invariant slopes (all groups) and intercepts (all groups)	2	15.13**						
16	Invariant slopes (all groups) and intercepts (MAE and EAE)	1[f]	0.50						
Dangerous people: Mother report									
Percentage foreign born									
17	Freely estimate slopes and intercepts			-0.58	-0.36	-0.08	9.22	8.48	9.25
18	Invariant slopes (all groups)	2	7.91*						
19	Invariant slopes (MAS and EAE)	1[g]	0.98						
20	Invariant slopes and intercepts (MAS and EAE)	1	0.23						
Percentage same household since 1995									
21	Freely estimate slopes and intercepts			0.08	0.08	0.54	8.21	7.64	7.64
22	Invariant slopes (all groups)	2	12.61**						
23	Invariant slopes (MAE and MAS)	1[h]	0.01						
24	Invariant slopes and intercepts (MAE and MAS)	1	21.14***						
Percentage White									
25	Freely estimate slopes and intercepts			0.52	0.24	0.44	6.05	6.77	7.48
26	Invariant slopes (all groups)	2	4.07						
27	Invariant slopes and intercepts (all groups)	2	16.49***						
28	Invariant slopes (all groups) and intercepts (MAS and EAE)	1[i]	0.04						
Percentage of families living in poverty									
29	Freely estimate slopes and intercepts			-0.57	-0.37	-0.46	9.00	8.40	9.84
30	Invariant slopes (all groups)	2	2.16						
31	Invariant slopes and intercepts (all groups)	2	15.59***						

		Δ*df*	$\Delta\chi^2$	Slopes			Intercepts		
				MAE	*MAS*	*EAE*	*MAE*	*MAS*	*EAE*
32	Invariant slopes (all groups) and intercepts (MAS and EAE)	1[j]	0.14						
Sense of safety: Mother report									
Percentage foreign born									
33	Freely estimate slopes and intercepts			-0.59	-0.33	0.02	6.71	7.27	5.35
34	Invariant slopes (all groups)	2	17.36***						
35	Invariant slopes (MAS and EAE)	1[k]	3.42						
36	Invariant slopes and intercepts (MAS and EAE)	1	14.86**						
Percentage same household since 1995									
37	Freely estimate slopes and intercepts			0.07	0.06	0.38	5.97	6.46	4.37
38	Invariant slopes (all groups)	2	7.80*						
39	Invariant slopes (MAE and MAS)	1[l]	0.00						
40	Invariant slopes and intercepts (MAE and MAS)	1	0.00						
Percentage White									
41	Freely estimate slopes and intercepts			0.49	0.24	0.37	4.02	5.68	4.22
42	Invariant slopes (all groups)	2	3.25						
43	Invariant slopes and intercepts (all groups)	2	13.10**						
44	Invariant slopes (all groups) and intercepts (MAE and MAS)	1[m]	0.64						
Percentage of families living in poverty									
45	Freely estimate slopes and intercepts			-0.53	-0.27	-0.37	6.67	7.15	5.97
46	Invariant slopes (all groups)	2	3.15						
47	Invariant slopes and intercepts (all groups)	2	13.70***						
48	Invariant slopes (all groups) and intercepts (MAE and MAS)	1[n]	1.07						
Physical environment: Mother report									

				Slopes			Intercepts		
		Δdf	$\Delta\chi^2$	MAE	MAS	EAE	MAE	MAS	EAE
Percentage foreign born									
49	Freely estimate slopes and intercepts			-0.59	-0.27	-0.25	5.34	5.26	4.22
50	Invariant slopes (all groups)	2	10.55**						
51	Invariance in slopes (MAE and EAE)	1[o]	0.43						
52	Invariance in slopes (MAS and EAE)	1[p]	0.34						
53	Invariant slopes and intercepts (MAE and EAE)	1[q]	0.96						
54	Invariant slopes and intercepts (MAS and EAE)	1[r]	7.30**						
Percentage same household since 1995									
55	Freely estimate slopes and intercepts			-0.03	-0.02	0.44	4.59	4.85	2.30
56	Invariant slopes (all groups)	2	15.82***						
57	Invariance in slopes (MAE and MAS)	1[s]	0.00						
58	Invariant slopes and intercepts (MAE and MAS)	1	0.25						
Percentage White									
59	Freely estimate slopes and intercepts			0.54	0.22	0.55	2.16	3.84	1.65
60	Invariant slopes (all groups)	2	13.04**						
61	Invariant slopes (MAE and EAE)	1[t]	0.04						
62	Invariant slopes and intercepts (MAE and EAE)	1	1.33						
Percentage of families living in poverty									
63	Freely estimate slopes and intercepts			-0.57	-0.24	-0.57	5.16	5.20	4.50
64	Invariant slopes (all groups)	2	8.58*						
65	Invariant slopes (MAE and EAE)	1[u]	0.02						
66	Invariant slopes and intercepts (MAE and EAE)	1	1.06						

Note. χ^2 values for clustered (non-clustered) models in MPLUS. CFI = Comparative Fit Index; TLI = Tucker Lewis Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual; MAE = Mexican American English; MAS = Mexican American Spanish; EAE = European American English. Each change in chi-square refers to a comparison of the current model with the immediately preceding model, except where noted by superscripts a through u; a and c and e-o and q-u compare the current model with the two models preceding it (e.g., a compares models 1 and 3); b, d, and p compare the current model with the three models preceding it (e.g., b compares model 1 and 4).

* $p<.05$

** $p<.01$

*** $p<.001$.

Table 4
Summary of Construct Validity Analyses

	Type of invariance		
Type of construct validity	***MAE and MAS***	***MAE and EAE***	***MAS and EAE***
Dangerous people: Child report			
Percentage foreign born		S&I	S&I
Percentage same household since 1995	S	S&I	S&I
Percentage White	S	S&I	S
Percentage of families living in poverty	S	S&I	S
Dangerous people: Mother report			
Percentage foreign born			S&I
Percentage same household since 1995	S		
Percentage White	S	S	S&I
Percentage of families living in poverty	S	S	S&I
Sense of safety: Mother report			
Percentage foreign born			S
Percentage same household since 1995	S&I		
Percentage White	S&I	S	S
Percentage of families living in poverty	S&I	S	S
Physical environment: Mother report			
Percentage foreign born		S&I	S
Percentage same household since 1995	S&I		
Percentage White		S&I	
Percentage of families living in poverty		S&I	

Note. MAE = Mexican American English; MAS = Mexican American Spanish; EAE = European American English; S = Slope, I = Intercept.