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Measurement Equivalence of the Language Brokering Scale for Chinese American Adolescents and their Parents

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Abstract

Language brokering occurs frequently in immigrant families. Using data from 279 Chinese American families with adolescents who function as language brokers for their parents, the current study developed a comprehensive scale to assess adolescents' and their parents' perceptions of language brokering. Both versions, parent and adolescent, showed stable factor structures. We also examined measurement equivalence, including factorial and construct validity invariance, for each subscale across parent gender, adolescent gender, adolescent nativity, and translation frequency. In general, metric factorial invariance was observed for most subscales across different groups; these subscales can thus be used in future studies examining the relations between language brokering and other variables. Further, two adolescent subscales (i.e., *adolescent-focused-burden*, *positive relations with parents*) and three parent subscales (i.e., *parent-focused-burden*, *negative feelings*, *positive relations with child*) demonstrated strong factorial invariance consistently across different groups, and can thus be used in future studies examining mean group differences in language brokering experiences. In terms of construct validity equivalence, most subscales were associated with parent-child conflict and adolescent depressive symptoms to a similar degree across parent gender, adolescent gender and nativity. Implications of the current findings and recommendations for future use are discussed.

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Keywords

language brokering; Chinese; adolescence; parent; measurement equivalence

Children whose parents depend on them to translate between English and their heritage language, either in written or in oral form, are known as language brokers (McQuillan & Tse, 1995). These children's expertise in two languages and two cultures allows them to serve as information gateways, helping their families thrive in the host country. The current literature has documented frequent language brokering in Mexican and Asian immigrant households (Chao, 2006; Orellana, Dorner, & Pulido, 2003). However, children's perceptions of the language brokering experience vary greatly: some report feeling a sense of efficacy (e.g., feeling proud, helpful, and useful) as language brokers, whereas others report feeling a sense of burden (e.g., feeling embarrassed, burdened, and uncomfortable) (McQuillan & Tse, 1995; Tse, 1996). Thus, language brokering can have either beneficial or detrimental consequences for the language broker's psychological well-being, sense of self, and quality of relationship with parents (Chao, 2006; Jones & Trickett, 2005; Tse, 1996; Weisskirch, 2007). For this reason, many researchers become increasingly interested in studying children's experiences of language brokering.

Although language brokering scales have been widely used with children from different ethnic backgrounds, little to no information is available on the psychometric properties of the language brokering scales used (Morales & Hanson, 2005). The primary goal of the current study is to develop a Language Brokering Scale (LBS) and to establish its reliability, factor structure and construct validity using a sample of Chinese American adolescents and their parents. We developed the scale and examined its reliability and factor structure separately for adolescents and their parents. To ensure that LBS is interpreted by diverse individuals in a similar manner, we further examined the measurement equivalence of both the adolescent and parent scales in two ways, looking for factorial invariance and validity invariance. Comparisons were made between adolescents' experiences translating for fathers versus mothers, as well as translating done by boys versus girls, by native-born versus foreign-born adolescents, and by frequent versus infrequent translators.

Adolescents' Experiences of Language Brokering

The current literature on language brokering shows five major aspects of children's language brokering experiences. Some studies found that language brokering can be challenging for child brokers, as many participants reported negative feelings of *burden* and *embarrassment* due to the responsibilities and pressures of having to translate; other studies suggested that children may sense that they help relieve their *parents' burden* or may even benefit from brokering by gaining a sense of *efficacy* and *independence* (Buriel et al., 1998; Tse, 1996; Weisskirch & Alva, 2002; Wu & Kim, 2009) (McQuillan & Tse, 1995). A limitation of the scales reviewed above is that they focus mainly on children's individual psychological experiences of language brokering, and do not address children's perceptions of the parent-child relationship as it relates to language brokering. This is especially important for individuals with a Chinese background, who tend to emphasize relationship quality to a greater extent than personal wellbeing (Kwan, Bond, & Singelis, 1997).

Language brokering has been associated with both positive and negative parent-child relationships. On the one hand, children may feel closer to their parents, developing more trust and respect for parents because of the opportunities created by language brokering (Chao, 2006; McQuillan & Tse, 1995). On the other hand, child brokers may experience role reversal, because their parents have to rely on them to convey information (Kam, 2011; Oznobishin & Kurman, 2009). By assessing additional items pertaining to positive relations with parents, disrespect of parents and role reversal, the current study examines whether perceptions of parent-child relationships emerge as distinct factors in language brokering experiences.

Parents' Experiences of Language Brokering

Another limitation in the language brokering literature is that previous studies have not assessed parents' experiences of having their child perform language brokering tasks for them. However, some studies do suggest that parents are likely to have both positive and negative feelings towards themselves, their children and their relationships with their children as a result of needing this kind of help. In a recent qualitative study, Latino immigrant parents reported they were proud of their children for being able to help the family through language brokering; yet they also expressed ambivalence about having to rely on their children (Corona et al., 2012). In addition, Martinez and colleagues (2009) found in their Latino immigrant sample that parents who had their children translate for them more frequently also reported more stress and less effective parenting practices. Compared with Latino immigrants, Asian American immigrants often enjoy higher socioeconomic status (Teranishi, Suárez-Orozco, & Suárez-Orozco, 2011), and language brokering is less normative (Chao, 2006). Thus, when Asian American parents do need to rely on their children for translation, the negative aspects of language brokering, such as role reversal, may become more salient (Chao, 2006).

Understanding parents' perspectives can not only uncover consequences of language brokering in the larger family context, but can also provide some insights into children's language brokering experiences. To assess parents' experiences of language brokering, the parent version of LBS includes subscales that are similar to those found in the adolescent version (parent-focused burden, negative feelings, adolescent efficacy, positive relations with child, role reversal, disrespect of parents). Compared with other scales in the literature, LBS better captures the complexity and multi-dimensionality of the language brokering experience from both perspectives, parent and child.

Measurement Equivalence across Parent Gender, Adolescent Gender, Adolescent Nativity, and Translation Frequency

Before proceeding to use LBS to assess children's and parents' experiences of language brokering, it is important to ensure that diverse respondents interpret the scale similarly – that is, to establish the measurement equivalence (Knight, Roosa, & Umana-Taylor, 2009) of LBS. Several factors may influence interpretations of language brokering experiences. First, parent gender might be a salient factor. In Asian immigrant families, fathers and mothers typically occupy different parenting niches, with fathers playing a more

authoritarian role and mothers a more nurturing role (Chao, 2006; Kim & Wong, 2002). These different parenting roles influence how fathers and mothers interact with their children (Wu & Kim, 2009). Child language brokers in these families may experience language brokering tasks differently, depending on the gender of the parent with whom they are interacting (Chao, 2006). Fathers and mothers may also perceive language brokering differently.

Some other factors may also influence children's and parents' language brokering experiences. For example, compared to boys and foreign-born youth, girls and native-born youth tend to report more translation experiences (Buriel, Perez, De Ment, Chavez, & Moran, 1998; Chao, 2006; Orellana et al., 2003); children who translated more frequently reported more internalizing problems (Chao, 2006). The current study examines whether the factor structure of the Language Brokering Scale is invariant across these four comparisons: translating for fathers versus mothers, translating done by boys versus girls, translating done by native-born versus foreign-born adolescents, and translating done by frequent versus infrequent brokers.

When examining the cross-group equivalence of the factor structure of a scale, several levels of invariance can be established. The most basic level of factorial invariance, configural invariance, requires that the scale be composed of the same set of items across groups (Widaman & Reise, 1997). Otherwise it would be meaningless to apply the scale to different populations. The second level of invariance, metric invariance, can be established if the relations between the scale and each item in the scale are the same across groups (Widaman & Reise, 1997). Metric invariance ensures that the units of the scale are identical, and that relations between the scale and other variables can be compared across groups. The next level of invariance, strong invariance, tests cross-group equivalence of the scale intercept (Widaman & Reise, 1997). Without strong invariance, one cannot determine whether a difference found in the mean scores of the scale indicates a true difference or is due to unequal measurement. Finally, the most restrictive form of invariance, strict invariance, requires that the precision of the scale be equivalent across groups (Chen, 2008). Even though achieving all four levels of invariance is ideal, one can use scales that achieve metric invariance in studies that focus on predictive relationships, with the caution that mean differences across groups may be caused by measurement artifacts (Chen, 2008). In comparison, scales achieving strong invariance can be more widely used in studies on both predictive relationships and group differences (Chen, 2008).

In addition to factorial invariance, the current study also attempts to establish the construct validity invariance of LBS, which is another important aspect of measurement equivalence (Knight et al., 2009). Validity invariance exists on two levels: the equivalence of the strength of the relation between the scale and the criterion variable (i.e., slope invariance), and the equivalence of the point of origin (i.e., intercept invariance; Knight et al., 2009). While achieving both levels of construct validity invariance is ideal, scales with slope invariance can be carefully used in studies focusing on predictive relationships. Studies have shown that language brokering is often associated with increased internalizing problems among child brokers (Chao, 2006) and increased parent-child conflict (Hua & Costigan, 2012; Jones & Trickett, 2005). The current study examines the construct validity invariance

of LBS by testing whether the relation between language brokering experiences and two criterion variables (i.e., adolescent depressive symptoms and parent-child conflict) vary by comparison group (i.e., translating for fathers versus mothers, translating done by boys versus girls, translating done by native-born versus foreign-born adolescents, translating done by frequent versus infrequent brokers).

Present Study

The aim of the present study is two-fold. Our first goal is to develop a reliable Language Brokering Scale for adolescents and parents separately. Our scale taps into the ways in which language brokering affects individual psychological experiences and also parent-child relationships. Our second goal is to examine whether the meaning of LBS is similar across different comparison groups, including fathers versus mothers, boys versus girls, foreign-born versus native-born adolescents, and frequent versus infrequent translators. This step aims to establish measurement invariance, including both factorial invariance and construct validity invariance, for the Language Brokering Scale. If measurement invariance exists, future studies can use LBS for different groups.

Method

Participants

Participants were 279 Chinese American families participating in the second wave of a short-term longitudinal study, when students were in high school (*M* age = 17.1 years, *SD* = 0.8). Slightly over half of the sample (54%) was female. Most adolescent participants were born in the U.S. (75%), while most of their parents (87% of fathers, 90% of mothers) were foreign born, primarily from Hong Kong and the Guandong province of Southern China. Most adolescents (86%) resided in two-parent homes.

We used specific criteria to identify analysis samples for each set of analyses. Adolescents responded to this question about language brokering: “Have you ever translated anything from English to Chinese for your parents?” Adolescents who responded affirmatively to this question and who had a valid response for at least one of the language brokering items for mothers (*N* = 252) or fathers (*N* = 234) were included in the final analysis sample. For the parent report analysis sample, we included parents who answered affirmatively to “Has your child ever translated anything from English to Chinese for you?” and who cited the frequency of translation as a few times a year or more (*N* = 226 and 164 for mother and father reports, respectively).

Procedure

After gaining consent from school districts, we selected seven middle schools with a substantive population of Asian American students (at least 20% of the student body). Chinese American families were then identified by school administrators, and 47% of them consented to participate in the study. Questionnaires for adolescents and their parents were distributed at school or mailed to the families’ homes, and research staff collected questionnaires at students’ schools two to three weeks after distribution. Of the families who received questionnaire packets at Wave 1, 76% completed the surveys. Four years later,

families were approached to participate in the second data collection wave. In total, 79% of Wave 1 participating families completed Wave 2 questionnaires. Both English and Chinese version questionnaires were available to participants. In order to ensure comparability of the two versions, questionnaires were translated into Chinese and then back-translated into English. Inconsistencies were resolved by two bilingual research assistants, with careful consideration of items' culturally-appropriate meaning. At Wave 2, the majority of adolescents (94%) used the English version questionnaire, while the majority of fathers and mothers (71%) completed the Chinese version.

Attrition analyses examining families who participated in both data collection waves compared to those who dropped out at Wave 2 revealed no significant differences between groups on key demographic variables (i.e., parental education, family income, parent and child immigration status, parent marital status, parental age) with one exception: boys were more likely to have dropped out than girls (χ^2 (1) = 16.1, $p < .001$).

Measures

Language brokering—The Language Brokering Scale was developed by the first author, drawing items from previous studies (Tse, 1996; Weisskirch & Alva, 2002) and introducing new items. All items for adolescents and their parents are presented in Tables 1 and 2, respectively. Both adolescents and their parents responded to the language brokering items. Adolescents were first asked whether they had ever translated something from English to Chinese for each of their parents (oral or written, either words or full sentences). Those who answered affirmatively were then asked about the frequency of translating for each parent, using the following response scale: 1 (*never*), 2 (*a few times a year*), 3 (*a few times a month*), 4 (*a few times a week*), 5 (*daily*). Adolescents were then prompted to answer 36 items related to their experiences translating for their mothers and fathers. Adolescents provided separate ratings for mothers and fathers. Each item was rated on a 5-point scale ranging from *strongly disagree* to *strongly agree*.

Mothers and fathers completed a similar Language Brokering Scale. Like adolescents, parents reported whether their adolescent had ever translated something from English to Chinese for them, and if he or she had done so, how frequently the adolescent translated, using a scale identical to the one used in the adolescent reports. Parents then responded to a series of 30 items about their experiences of having their child translate for them. Each item was rated on a 5-point scale ranging from *strongly disagree* to *strongly agree*. As seen in Tables 1 and 2, some parent-and adolescent-report items were identical, while others were respondent specific.

We also created a dichotomous variable of translation frequency for adolescent reports of translating for mothers, adolescent reports of translating for fathers, mother reports, and father reports. As the median frequency in all four cases was a few times a month, translation was described as either *infrequent* (i.e., a few times a month or less) or *frequent* (i.e., a few times a week or more) using a median split method. The percentage of adolescents who qualified as frequent translators was 44% in adolescent reports of translating for mothers, 32% in adolescent reports of translating for fathers, 26% in mother reports, and 22% in father reports.

Parent-child conflict—The parent-child conflict measure was adapted from the Asian American Family Conflict Scale (Lee, Choe, Kim, & Ngo, 2000). Using a scale ranging from (1) "almost never" to (5) "almost always," adolescents, fathers and mothers all responded to 10 items about the likelihood of culturally salient conflicts occurring between parents and children. An example item would be, "Your parent tells you what to do with your life, but you want to make your own decisions." The internal consistency was high across informants (α = .82 to .88).

Adolescent depressive symptoms—The Center for Epidemiologic Studies of Depression Scale (CES-D) (Radloff, 1977) was used to assess adolescent depressive symptoms. Adolescents, fathers, and mothers all rated 20 items on adolescents' depressed mood in the past two weeks using a scale ranging from (0) "rarely or none of the time" to (3) "most or all of the time." The internal consistency was high across informants (α = .80 to .91).

Data Analysis Plan

We conducted a series of analyses to validate the Language Brokering Scale for adolescents and parents. All analyses were conducted using Mplus 7 (Muthén & Muthén, 1998–2012). Because responses to the language brokering items were on a 5-point Likert scale, we treated them as ordered-categorical measures and used a mean- and variance-adjusted weighted least squares (WLSMV) estimator for all the analyses. The WLSMV estimator is considered to provide robust estimation for categorical CFA models under modest deviations from underlying normality and for moderate sample sizes (Flora & Curran, 2004). Analyses proceeded in three steps. First, we conducted exploratory factor analyses (EFA) with a promax rotation to examine the factor structure of the measure for adolescent reports and parent reports of language brokering. Data for fathers and mothers were nested (i.e., structured in separate rows of the dataset) in each of the adolescent and parent report models. This was done in order to generate a consistent factor structure across parent gender. We relied on a combination of model fit statistics (root mean square error or approximation, RMSEA) and examination of scree plots to determine the number of factors. Using the EFA factor loadings and previous literature on language brokering as a guide, we then identified items comprising each factor and conducted a series of confirmatory factor analyses (CFAs). This was done to assess whether the structures developed from the general EFA models were also tenable in the simple-structure CFAs, and in order to determine whether the CFA models could be used to run further tests of measurement equivalence. Model fit for each population was evaluated using the comparative fit index (CFI) and the root mean square error of approximation (RMSEA). Good model fit is represented by CFI values of 0.96 or above, and RMSEA values of 0.05 or below (Yu, 2002).

Third, we conducted multi-group confirmatory factor analysis (CFA) to examine the cross-group equivalence of the derived factors (Millsap & Yun-Tein, 2004). Four types of factorial invariance (configural, metric, strong, and strict) were tested sequentially, from the least restrictive to the most. 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. For identification of a baseline model, we made the following four model specifications based on Millsap and

Yun-Tein's (2004) recommendations: (a) set the factor loading of the scaling indicator to 1 for all groups; (b) constrained the first two thresholds of the scaling indicator to be equal across groups; (c) constrained the first threshold of all the other indicators to be equal across groups; (d) set the residual variances of all the indicators to 1 in the first group and freely estimated them in all the other groups; (e) set the mean of the latent factor to 0 in the first group and freely estimated it in all the other groups. If configural invariance exists, the items are a good representation (i.e., factor loadings greater than .40; Stevens, 2009) 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. Strong invariance exists when there is also similarity of the item intercepts across groups. Finally, strict invariance is established by adding a test of the similarity of the unique error variances associated with each item across groups. Each successive invariance level was tested for applicability to ensure that there was no significant decline in model fit from the previous invariance level. 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, & Muthén, 1989). To determine a partially invariant model, we first freed the item with the highest modification index provided by Mplus, which denoted the extent to which the model fit would be improved by freely estimating this item across groups (Kline, 2011). If invariance was not established, we then freed the item with the next highest modification index, and so on. Items that did not meet criteria for invariance in factor loadings were exempt from the test of invariance in item intercepts (Millsap, 1997). We were primarily interested in testing factorial invariance across adolescent reports of language brokering for mothers and fathers, as well as across mother and father self-reports. Our secondary goal was to examine measurement invariance across adolescent gender, nativity, and translation frequency.

Finally, we examined the cross-group equivalence of construct validity (Knight et al., 2009) for each subscale. Two types of validity invariance, slope and intercept, were tested sequentially. Slope invariance assumes that the strength of the relation between the latent factor and the criterion variable is the same across groups, whereas intercept invariance assumes that the predicted value of the criterion variable conditional on the latent factor is the same across groups. For each grouping variable (i.e., adolescent report for mothers versus fathers, mother versus father report, adolescent gender, adolescent nativity, translation frequency), we examined each subscale's construct invariance with two criterion variables, first with parent-child conflict, and again with adolescent depressive symptoms.

There are a few methodological issues to be noted before reporting on the measurement invariance analyses. First, for invariance analyses across parent gender, cross-group reports were not independent from each other (Benner & Kim, 2009). Therefore, instead of using multi-group CFA, we modeled adolescent reports for mothers and fathers within a single covariance matrix. The same approach was adopted to test measurement invariance across mother and father reports of language brokering by their children. Second, we imposed additional model constraints when they were necessary in order for models to properly converge to an admissible solution (i.e., one in which all parameter estimates are within permissible bounds). These constraints addressed issues such as negative residual variances and correlations between residuals that exceeded unity. Parameter estimates outside of

theoretical bounds are more likely to occur when true parameter values are near the boundary and sample sizes are modest. Some occurrences of "out-of-bounds" estimates were related to the presence of very high correlations between identical items across reporters (e.g., mothers and fathers). In these cases, such items were eliminated from specific models as needed to stabilize the estimations. Because model restrictions addressing the highly correlated residuals were non-linear (i.e., imposed on the covariances), chi-square difference tests designed for models using the WLSMV estimator were not possible in Mplus. Therefore, we employed Wald tests for model comparison for all the invariance analyses. Third, responses to some items were collapsed if they were not endorsed in a certain group. For example, we collapsed the response category 5 (*strongly agree*) with category 4 (*agree*) for one item ("My parent is powerless when s/he asks me to translate"), as no adolescent selected category 5 when reporting on translating for mothers.

Results

Factor Analyses of the Language Brokering Scale

Adolescent reports—Scree plots from the EFA results for adolescent reports of language brokering suggested an 8-factor model (RMSEA = .038). Through an examination of factor loadings in combination with a review of previous literature on language brokering, we identified seven conceptually meaningful factors: adolescent-focused burden (four items), parent-focused burden (four items), disrespect of parents/role reversal (seven items), positive relations with parents (three items), negative feelings (six items), adolescent efficacy (three items), and adolescent independence (three items). In total, six items from adolescents' reports of language brokering for parents were unclassified due to low factor loadings or a lack of conceptual fit with the identified factors.

We next conducted a series of CFAs to establish goodness of fit for factors. Models with three items comprising a factor were fully saturated, and thus goodness of fit estimates are not provided. CFA results (factor loadings and goodness of fit indices) are presented in Table 1. In some cases, we introduced correlated residuals within a given factor to improve model fit (see Sörbom, 1989 for a discussion of model modification). The results indicate a generally good model fit for all the subscales. Loadings for all factors (including those comprised of three items) were greater than .40 with only one exception, which came in at .37, and all of them were significant at $p < .001$.

Parent reports—The scree plot from the EFA results for parent reports of language brokering suggested a 7-factor model (RMSEA = .056). Through an examination of factor loadings in combination with a review of previous literature on language brokering, we identified six conceptually meaningful factors: parent-focused burden (four items), role reversal (seven items), disrespect of parents (four items), negative feelings (three items), adolescent efficacy (three items), and positive relations with child (three items). Six language brokering items from parent reports were unclassified due to low factor loadings or a lack of conceptual fit with the identified factors.

We next conducted a series of CFAs for parents' reports of language brokering, and results are shown in Table 2. As with the analyses of adolescent reports of language brokering, in

some cases, we introduced correlated residuals within a given factor to improve model fit. We observed good model fit for all the subscales. Loadings for all the factors were greater than .40 with only one exception, which came in at .36, and all of them were significant at $p < .001$.

Relations among the Language Brokering Subscales

We next explored the language brokering subscales and their interrelations by examining their descriptive statistics and bivariate correlations. We paid special attention to the subscales capturing individual psychological experiences of language brokering versus those capturing parent-child relationships in language brokering. In general, stronger individual-focused burden and negative feelings about language brokering were associated with elevated levels of disrespect of parent and/or role reversal. Additionally, stronger perceptions of adolescent efficacy and independence were associated with more positive parent-child relationships. We also observed some unexpected relations in that positive parent-child relationships were also linked to stronger negative psychological experiences (individual-focused burden, negative feelings) and more negative parent-child relationships (e.g., disrespect of parent, role reversal).

To further explore the individual-focused versus relationship-focused subscales, we conducted several hierarchical regression models testing the extent to which they were associated with two important outcomes of language brokering, parent-child conflict in general and adolescent depressive symptoms. In each regression analysis, we first entered one individual-focused subscale to the model and then one relationship-focused subscale, seeking to know whether the relationship-focused subscale explained more variances in the outcome variable over and above the individual-focused subscale. Results indicated that the explained variances in the outcome variable increased considerably, from a range of .09 – .17 to a range of .10 – .26. Moreover, in many occasions the outcome variable was more strongly associated with the relationship-focused variables but not the individual-focused variables. For example, feelings of burden did not significantly predict teen reports of father-child conflict or teen depression, while reports of disrespect towards father significantly predicted both.

Factorial Invariance Analyses of the Language Brokering Scale

Factorial invariance across adolescent reports of language brokering for mothers and fathers—We observed varying degrees of factorial invariance for the seven factors under study across adolescent reports of language brokering for mothers and fathers (see the left portion of Table 4). For *adolescent-focused burden*, *positive relations with parents* and *adolescent efficacy*, we observed configural, metric, strong, and strict invariance across adolescent reports on mothers and fathers. For *adolescent-focused burden*, one item ("Translating takes time away from other things I want to do") was eliminated from this specific set of analyses because the correlation between adolescent reports for mothers and fathers was very close to 1.

Adolescent reports for *parent-focused burden* demonstrated configural and metric invariance across reports on both parents. A strong invariance model was not tenable, but we observed

evidence for a partially strong invariance model upon freeing one item ("My parent doesn't need to learn English because I translate for him/her," threshold 4). Partial strict invariance was also achieved (freeing the same item).

For adolescents' reports of *disrespect of parents/role reversal*, we were able to establish configural, metric, and strong invariance. A partially strict model was adopted, after we freed one item ("My parent is powerless when s/he asks me to translate") across reports on mothers and fathers. Three items ("I do not have respect for my parent because I translate for him/her," "My parent should think less of him/herself when s/he asks me to translate," "My parent is unfit to be my parent when s/he asks me to translate") were eliminated from this specific set of analyses because the correlations between adolescent reports for mothers and fathers were very close to 1.

For adolescents' reports for *negative feelings*, we also observed invariance at the configural, metric, and strong levels; however, the strict invariance model did not achieve adequate model fit, leading us to adopt a partially strict model in which we allowed one item ("I feel uneasy when my parent asks me to translate") to vary across groups.

Adolescents' reports for *independence* achieved configural and metric invariance across reports on both parents. Because a strong invariance model did not have an acceptable fit for this subscale, a partially strong invariance model was adopted, in which we allowed one item ("I feel competent and capable when I translate for my parent," threshold 2, 3, and 4) to vary across groups. This item was also freed in the partially strict invariance model.

Factorial invariance across mother and father reports of adolescents' language brokering—We next examined factorial invariance across mother and father reports of adolescents' language brokering activities (see the right portion of Table 4). Out of the six subscales, we observed configural, metric, strong, and strict invariance across mother and father reports for three subscales (*parent-focused burden*, *adolescent efficacy*, and *positive relations with child*). The remaining three subscales achieved configural, metric and strong invariance. Partially strict invariance models were adopted by freeing one item for each of the three subscales ("I feel unfit to be a parent when I ask my child to translate for me" for *role reversal*, "My child does not have respect for me because I ask him/her to translate for me" for *disrespect of parents*, and "I feel helpless when my child translates for me" for *negative feelings*).

Factorial invariance across adolescent gender, nativity and translation frequency—Our last three sets of factorial invariance analyses tested equivalence between language brokering done by boys versus girls, again by U.S.-born and foreign-born adolescents, and finally by adolescents who translated frequently versus infrequently. The left portion of Table 5 displays levels of invariance achieved for each subscale, from each type of report (i.e., adolescent report on fathers, adolescent report on mothers, father report, mother report). A few subscales failed to converge, likely due to the modest sample size relative to the number of parameters being estimated. Almost all the remaining subscales (22 out of 22 for adolescent gender, 21 out of 21 for nativity, and 24 out of 25 for translation frequency) achieved at least metric invariance.

Validity Invariance Analyses of the Language Brokering Scale

Validity invariance across adolescent reports of language brokering for mothers and fathers—We first examined whether the relations between language brokering and two criterion variables, parent-child conflict and adolescent depressive symptoms, were invariant across adolescent reports for mothers and fathers. As shown in the upper portion of Table 6, regarding relations between language brokering and parent-child conflict, we were able to establish slope invariance, but not intercept invariance, for three of the seven subscales (*parent-focused burden*, *positive relations with parents*, *adolescent efficacy*). For the other four subscales (*adolescent-focused-burden*, *parental disrespect/role reversal*, *negative feelings*, and *independence*) regarding relations between language brokering and adolescent depressive symptoms, we observed both slope and intercept invariance for all the subscales.

Validity invariance across mother and father reports of adolescents' language brokering—We next examined whether the relations between language brokering and parent-child conflict, as well as the relations between language brokering and adolescent depressive symptoms, were invariant across mother and father reports. As shown in the lower portion of Table 6, all subscales achieved both slope and intercept invariance with both criterion variables, with one exception. We did not observe slope invariance for the relation between negative feelings and adolescent depressive symptoms across father and mother reports.

Validity invariance across adolescent gender, nativity, and translation frequency—Our last three sets of validity invariance analyses examined the relations between language brokering and the two criterion variables across boys and girls, again between adolescents who were U.S. born to those who were foreign born, and finally between adolescents who translated frequently versus infrequently. This was done separately for adolescent report on fathers, adolescent report on mothers, father report and mother report. We were not able to examine validity invariance for subscales that failed to converge in factorial invariance analyses. As shown in the right portion of Table 5, both slope and intercept invariance were established for the majority of the tested relations (37 out of 42 for adolescent gender, 39 out of 42 for adolescent nativity, and 33 out of 48 for translation frequency) between each subscale and each criterion variable from each report.

Discussion

Language brokering occurs frequently in immigrant families, but the current literature lacks a comprehensive measure that captures both children's and parents' perceptions of language brokering and the ways in which brokering affects parent-child relationships and each individual's psychological health. The current study developed a new measure of language brokering with Chinese American families, and validated its use by examining its factorial and validity invariance across parent gender, adolescent gender, adolescent nativity, and translation frequency. In general, both parent and adolescent subscales demonstrated metric factorial invariance and slope construct validity invariance, which means that these subscales can be used in future studies examining the relations between language brokering

and other variables. Further, two adolescent subscales (i.e., *adolescent-focused-burden*, *positive relations with parents*) and three parent subscales (i.e., *parent-focused-burden*, *negative feelings*, *positive relations with child*) demonstrated strong factorial invariance consistently across different groups, which means they can be used in future studies examining mean group differences in language brokering experiences.

Compared with measures currently available in the literature, the Language Brokering Scale (LBS) better captures the complexity and multi-dimensionality of the language brokering experience from adolescents' and parents' perspectives alike. Going beyond the focus on individuals' psychological experiences of language brokering in prior work, the current scale adds dimensions related to parent-child relationships (i.e., positive relations, role reversal, disrespect of parents). Subscales related to parent-child relationships explain variances in adolescent and family adjustment over and above those explained by subscales focusing on individual experiences. The incremental value of the relationship-related scales demonstrates the importance of examining relationship-related outcomes of language brokering in addition to individual feelings. Unexpectedly, we observed that positive parent-child relationships were linked to stronger negative psychological experiences (e.g., individual-focused burden, negative feelings) and also to negative parent-child relationships (e.g., disrespect of parent, role reversal). These unexpected findings further highlighted the nuanced nature of language brokering, which has both positive and negative implications for parent-child relationships.

The current scale also assesses parents' language brokering experiences, with most of the subscales echoing the adolescent version. Six distinct and reliable dimensions emerged, including parent-focused burden, negative feelings, adolescent efficacy, positive relations with children, disrespect of parents, and role reversal. The large number of subscales suggests that parents' language brokering experiences vary to a great degree, and that there can be both positive and negative outcomes to parents' well-being and parent-child relationships. This is consistent with a previous qualitative study on Latino immigrant families, in which parents reported mixed feelings about having their children translate for them (Corona et al., 2012). Moreover, parents' perceptions of language brokering may be more nuanced than their children's. Whereas disrespect of parents and role reversal formed the same factor in the adolescent report, they emerged as two distinct factors in parent reports. Perhaps parents are more likely than their children to notice subtle changes in parent-child power dynamics. Thus, adding parents' perspectives may be especially valuable when studying the effect of language brokering on parent-child relationships.

After the factor structure of LBS was established, we proceeded to examine its factor structure equivalence across a variety of factors, including parent gender, adolescent gender, adolescent nativity, and translation frequency. For both the parent and adolescent versions of the LBS, most subscales demonstrated metric factorial invariance across different groups, with only a few exceptions. This finding suggests that the LBS subscales can be used in future studies examining the relations between language brokering and other variables (Chen, 2008). Moreover, regarding factorial invariance, two adolescent subscales (i.e., *adolescent-focused-burden*, *positive relations with parents*) and three parent subscales (i.e., *parent-focused-burden*, *negative feelings*, *positive relations with child*) demonstrated strong

invariance consistently across different groups. These subscales can be more widely used in future studies examining mean group differences in language brokering experiences.

In addition to factorial invariance, the current study also examined cross-group equivalence in the relation between language brokering and parent-child conflict, as well as that between language brokering and adolescent depressive symptoms. Most adolescent and parent subscales demonstrated slope invariance consistently across parent gender, adolescent gender and nativity. However, more non-invariance in slopes and intercepts occurred between frequent versus infrequent translators. We recommend the use of the LBS in future studies focusing on the relation between language brokering and other variables, with the caution that such relations may vary according to the frequency of translation. The relations between language brokering and criterion variables were consistent with results from previous studies (Chao, 2006; Hua & Costigan, 2012), in that certain aspects of language brokering were associated with increased parent-child conflict and more depressive symptoms among adolescents. These aspects include negative individual experiences, such as sense of burden and negative feelings, as well as disruptions in parent-child relationships resulting from language brokering, such as role reversal and disrespect of parents. Our findings also add to the literature by demonstrating that the strength of these relationships does not vary much, whether translating is done for fathers versus mothers, by boys versus girls, or by foreign-born versus native-born adolescents.

Given the strong psychometric properties of the new LBS, future studies may use it to examine the mechanisms of language brokering. For example, there has been a disagreement about whether adolescents' language brokering leads to the detrimental parentification of children, or to family members' interdependence (Kam, 2011; Morales & Hanson, 2005). The availability of subscales in LBS, such as parent-child role reversal and positive relationship, provides opportunities to test these specific hypotheses empirically with samples of Chinese American families. Furthermore, the initial evidence that various subscales of individual feelings and parent-child relationships are associated with family and individual well-being invites future studies to identify precursors, mediators, and moderators of these relationships.

The LBS may also be a useful tool for policy-making and intervention purposes. For example, for families in which the parents need language brokering, a sense of burden for either the children or the parents is a potential risk factor. Child and parent versions of LBS can be used as a screening tool for social workers to identify these at-risk families. Interventions may also use the parent-child relationship subscales to assess positive or negative dynamics in families with child brokers, and work on preventing or eliminating parent-child role reversal and increasing adolescents' respect for parents.

Some limitations of the study design should be considered when evaluating the findings. One limitation concerns the sample, which consists of Chinese American adolescents and their parents residing in Chinese communities in metropolitan areas of northern California. Future studies are needed to validate the LBS in samples from more diverse racial/ethnic backgrounds, as well as samples from areas with a lower density of immigrants. Additionally, we observed partial invariance for LBS in a few instances. While non-

equivalence calls for caution when making group comparisons, these instances also represent potential topics ripe for future research. For example, the partial validity invariance of parents' negative feelings indicates that more attention should be paid to the different perceptions of language brokering held by fathers and mothers and the ways in which they impact adolescents' depressive symptoms differently.

Despite these limitations, the present investigation extends the existing scholarship on language brokering in immigrant families. By demonstrating good internal reliability and construct validity for the LBS with a sample of Chinese American families, the current study has laid a foundation for future studies assessing both adolescents' and parents' experiences of language brokering. As language brokering research proliferates, it is important to establish measures that are valid for use with families of immigrants from diverse backgrounds. Further evidence is needed to establish the reliability and validity of the LBS in families from other racial/ethnic backgrounds. The current study also calls for a more comprehensive investigation of language brokering in future research, which will mean focusing not only on adolescent perspectives but also on those of their fathers and mothers.

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Table 1

Confirmatory Factor Analysis for Adolescent Report of Language Brokering

Factor/Item	λ	χ^2 (*df*)	*CFI*	*RMSEA*
Adolescent-Focused Burden		10.09 (2)	.99	.09
It is stressful to translate	.82			
Translating is a burden	.93			
Translating takes time away from other things I want to do	.73			
I feel pressure to translate for my parent	.64			
Parent-Focused Burden		2.78 (2)	1.00	.03
My parent doesn't need to learn English because I translate for him/her	.62			
It is my obligation to translate for my parent	.67			
My parent has no one else to turn to but me to help translate for him/her	.61			
My parent has come to depend on me to translate for him/her	.82			
Disrespect of Parent/Role Reversal		17.00 (12)	1.00	.03
I do not have respect for my parent because I translate for him/her	.75			
I have a poor relationship with my parent b/c I translate for him/her	.82			
My parent is powerless when s/he asks me to translate	.81			
My parent should think less of him/herself when s/he asks me to translate	.93			
My parent is unfit to be my parent when s/he asks me to translate	.83			
My parent and I get into arguments because I translate for him/her	.55			
I feel more knowledgeable than my parent b/c I translate for him/her	.42			
Positive Relations with Parents		n/a	n/a	n/a
My parent praises me (thinks highly of me) b/c I translate for him/her	.57			
My parent values my opinion because I translate for him/her	.89			
I value my parent's opinion because I translate for him/her	.57			
Negative Feelings		7.22 (6)	1.00	.02
I feel helpless when my parent asks me to translate	.86			
I feel miserable when my parent asks me to translate	.92			
I feel hopeless because my parent asks me to translate	.89			
I feel uneasy when my parent asks me to translate	.73			
I am embarrassed to translate when my parent asks me to	.69			
I have disappointed parents by translating poorly	.54			
Adolescent Efficacy		n/a	n/a	n/a
I am good at translating	.95			
I am skilled at translating	.99			
I am effective at translating	.88			
Adolescent Independence		n/a	n/a	n/a
Translating makes me feel independent and mature	.69			
I feel useful when I translate	.91			
I feel competent and capable when I translate for my parent	.67			

Note. n/a = not applicable; these models of three items were fully saturated, and model fit indices are not available.

Table 2

Confirmatory Factor Analysis for Parent Report of Adolescent Language Brokering

Factor/Item	λ	χ^2 (*df*)	*CFI*	*RMSEA*
Parent-Focused Burden		2.11 (1)	1.00	.06
It is stressful to ask my child to translate for me	.73			
It is a burden to ask my child to translate for me	.82			
Asking my child to translate for me takes time away from other things I want to do	.94			
I don't want to ask my child to translate for me	.47			
Role Reversal		43.63 (14)	.97	.08
My child is more knowledgeable than I am because s/he translates for me	.58			
My child doesn't act like a child when s/he translates for me	.46			
I have no one else to turn to but my child to help translate for me	.43			
When my child translates for me, I feel like s/he is the parent and I am the child in the family	.80			
I think less of myself when I ask my child to translate for me	.81			
I have come to depend on my child to translate for me	.49			
I feel unfit to be a parent when I ask my child to translate for me	.70			
Disrespect of Parent		3.23 (2)	1.00	.04
My child and I get into arguments because s/he translates for me	.65			
My child has disappointed me by translating poorly	.57			
I have a poor relationship with my child because s/he translates for me	.87			
My child does not have respect for me because I ask him/her to translate for me	.75			
Negative Feelings		n/a	n/a	n/a
I am embarrassed that my child translates for me	.73			
I feel helpless when my child translates for me	.94			
I feel powerless when I ask my child to translate for me	.61			
Adolescents' Efficacy		n/a	n/a	n/a
My child is good at translating	.88			
My child is skilled at translating	.98			
My child is effective at translating	.86			
Positive Relations with Child		n/a	n/a	n/a
I think highly of my child because s/he translates for me	.55			
I value my child's opinions because s/he translates for me	.75			
My child values my opinion because s/he translates for me	.69			

Note. n/a = not applicable; these models of three items were fully saturated, and model fit indices are not available.

Table 3

Descriptive Statistics for Adolescent and Parent Report of Language Brokering Subscales

	1	2	3	4	5	6	*Mean*	*SD*
Adolescent report: father								
1. Child-focused burden	--						2.66	1.08
2. Parent-focused burden	.62**	--					2.45	.89
3. Disrespect of parent/role reversal	.59**	.48**	--				1.72	.63
4. Positive relations with parents	.13*	.34**	.17**	--			2.64	.84
5. Negative feelings	.69**	.40**	.64**	.10	--		2.09	.83
6. Adolescent efficacy	.08	.31**	.10	.42**	−.15*	--	2.81	.90
7. Adolescent independence	.21**	.41**	.21**	.59**	.02	.53**	3.00	.93
Adolescent report: mother								
1. Child-focused burden	--						2.74	1.02
2. Parent-focused burden	.49**	--					2.63	.85
3. Disrespect of parent/role reversal	.48**	.40**	--				1.74	.62
4. Positive relations with parents	.02	.30**	.08	--			2.74	.84
5. Negative feelings	.65**	.32**	.56**	.00	--		2.14	.84
6. Adolescent efficacy	−.12	.21**	−.01	.36**	−.28**	--	2.88	.89
7. Adolescent independence	.06	.33**	.13*	.58**	.08	.47**	3.12	.88
Father report								
1. Parent-focused burden	--						2.10	.65
2. Role Reversal	.49**	--					2.45	.59
3. Disrespect of parent	.55**	.53**	--				2.02	.58
4. Negative feelings	.61**	.59**	.56**	--			2.17	.67
5. Adolescent efficacy	−.14	.16*	−.10	−.08	--		3.32	.76
6. Positive relations with child	.20**	.50**	.12	.22**	.24**		2.99	.69
Mother report								
1. Parent-focused burden	--						2.04	.68
2. Role Reversal	.52**	--					2.46	.62
3. Disrespect of parent	.56**	.43**	--				1.93	.58
4. Negative feelings	.55**	.50**	.47**	--			2.08	.68

	1	2	3	4	5	6	*Mean*	*SD*
5. Adolescent efficacy	−.02	.26*	−.17*	−.01	--		3.30	.72
6. Positive relations with child	.18**	.55**	.16*	.26**	.27**		2.93	.71

Table 4

Confirmatory Factor Analytic Model of Factorial Invariance Tests across Language Brokering for Mothers and Fathers

Adolescent Reports					Parent Reports				
Model	**$\Delta\chi^2$**	**Δdf**	***CFI***	***RMSEA***	**Model**	**$\Delta\chi^2$**	**Δdf**	***CFI***	***RMSEA***
Adolescent-Focused Burden					*Parent-Focused Burden*				
1 Configural	--	--	.998	.095	1 Configural	--	--	.995	.075
2 Metric	1.87	2	.998	.084	2 Metric	3.54	3	.995	.068
3 Strong	13.84	8	.997	.073	3 Strong	4.87	7	.996	.052
4 Strict	6.52	3	.997	.068	4 Strict	2.73	4	.996	.047
Parent-Focused Burden					*Role Reversal*				
5 Configural	--	--	1.000	.020	5 Configural	--	--	.968	.059
6 Metric	3.67	3	.999	.035	6 Metric	5.20	6	.969	.057
7 Strong	20.33 *	11	.998	.039	7 Strong	21.81	18	.971	.049
7p Partially strong	16.48	10	.998	.037	8 Strict	14.89 *	7	.971	.048
8 Strict	3.29	4	.998	.034	8p Partially strict	7.08	6	.972	.046
Disrespect of Parent/Role Reversal					*Disrespect of Parent*				
9 Configural	--	--	1.000	.036	9 Configural	--	--	.979	.076
10 Metric	4.41	3	1.000	.041	10 Metric	.70	3	.981	.067
11 Strong	5.94	10	1.000	.025	11 Strong	4.12	8	.989	.043
12 Strict	10.54 *	4	1.000	.027	12 Strict	23.29 ***	4	.980	.053
12p Partially strict	4.30	3	1.000	.025	12p Partially strict	4.27	3	.988	.042
Positive Relations with Parents					*Positive Relations with Child*				
13 Configural	--	--	1.000	.052	13 Configural	--	--	1.000	.000
14 Metric	1.19	2	1.000	.038	14 Metric	1.03	2	1.000	.000
15 Strong	9.47	8	.999	.038	15 Strong	12.02	8	.996	.025
16 Strict	1.89	3	1.000	.032	16 Strict	5.89	3	.995	.026
Negative Feelings					*Negative Feelings*				
17 Configural	--	--	.997	.083	17 Configural	--	--	.997	.054
18 Metric	2.13	5	.997	.081	18 Metric	1.99	2	.995	.053
19 Strong	22.15	17	.997	.075	19 Strong	7.26	5	.990	.061
20 Strict	20.64 **	6	.997	.064	20 Strict	13.90 **	3	.976	.083

Adolescent Reports					Parent Reports				
Model	**$\Delta\chi^2$**	**Δdf**	***CFI***	***RMSEA***	**Model**	**$\Delta\chi^2$**	**Δdf**	***CFI***	***RMSEA***
20p Partially strict	4.38	5	.997	.072	20p Partially strict	3.03	2	.989	.057
Adolescent Efficacy					*Adolescent Efficacy*				
21 Configural	--	--	1.000	.000	21 Configural	--	--	1.000	.000
22 Metric	.93	2	1.000	.000	22 Metric	.94	2	1.000	.000
23 Strong	15.50	8	1.000	.000	23 Strong	7.58	8	1.000	.015
24 Strict	.75	3	1.000	.000	24 Strict	4.77	2	.999	.029
Adolescent Independence									
25 Configural	--	--	1.000	.000					
26 Metric	2.93	2	1.000	.041					
27 Strong	21.30 **	8	.999	.071					
27p Partially strong	7.08	5	1.000	.041					
28 Strict	3.83	3	1.000	.039					

Note. Metric invariance model = configural invariance model + factor loadings invariant

Strong invariance model = metric invariance model + intercepts invariant

Partially strong variance model = metric invariance model + some intercepts invariant

Strict invariance = previous strong variance model + unique variance invariant

Partially strict invariance model = previous strong variance model + some unique variance invariant.

Table 5

Confirmatory Factor Analytic Model of Factorial Invariance Tests across Adolescent Gender, Nativity, and Translation Frequency

	Factorial Invariance			Validity Invariance					
				Gender		Nativity		Trans Freq	
	Gender	Nativity	Trans Freq	Conflict	Depres	Conflict	Depres	Conflict	Depres
Adolescent Report on Father									
Adolescent-Focused Burden	strict	strict	strong	intcpt	intcpt	intcpt	intcpt	intcpt	intcpt
Parent-Focused Burden	strong	strict	metric	intcpt	intcpt	intcpt	intcpt	intcpt	partial
Disrespect of Parent/Role Reversal	metric	strict	strict	intcpt	intcpt	intcpt	intcpt	intcpt	intcpt
Positive Relations with Parents	strict	strict	metric	intcpt	intcpt	intcpt	intcpt	slope	intcpt
Negative Feelings	strong			intcpt	intcpt				
Adolescent Efficacy			strict					intcpt	intcpt
Adolescent Independence	strict	strict	strict	intcpt	intcpt	intcpt	partial	intcpt	intcpt
Adolescent Report on Mother									
Adolescent-Focused Burden	strong	strict	strict	intcpt	intcpt	intcpt	intcpt	intcpt	partial
Parent-Focused Burden	strict	strict	strict	intcpt	intcpt	intcpt	intcpt	intcpt	slope
Disrespect of Parent/Role Reversal			metric					intcpt	intcpt
Positive Relations with Parents	strict	strong	strict	intcpt	intcpt	intcpt	intcpt	intcpt	intcpt
Negative Feelings	strong		configural	intcpt	intcpt			intcpt	partial
Adolescent Efficacy	strict		strong	intcpt	intcpt			slope	
Adolescent Independence	strict	strict	strict	intcpt	intcpt	intcpt	intcpt	intcpt	intcpt
Father Report									
Parent-Focused Burden	strong	strict	strong	partial	intcpt	intcpt	intcpt	intcpt	intcpt
Role Reversal	strict	strict	strict	intcpt	intcpt	intcpt	intcpt	partial	intcpt
Disrespect of Parent		strict	metric			intcpt	intcpt	partial	intcpt
Negative Feelings	strong	strict	strict	intcpt	intcpt	intcpt	intcpt	partial	intcpt
Adolescent Efficacy	strong	strict	strict			partial	intcpt	slope	slope
Positive Relations with Child	strong	strict	strict	intcpt	intcpt	intcpt	intcpt	intcpt	intcpt
Mother Report									
Parent-Focused Burden	strict	strong	strict	intcpt	intcpt	intcpt	intcpt	intcpt	intcpt
Role Reversal		strict	metric			intcpt	intcpt	slope	slope

	Factorial Invariance			Validity Invariance					
				Gender		Nativity		Trans Freq	
	Gender	Nativity	Trans Freq	Conflict	Depres	Conflict	Depres	Conflict	Depres
Disrespect of Parent	strong	strict	strong	intcpt	intcpt	intcpt	partial	intcpt	intcpt
Negative Feelings	strict	strong	metric	intcpt	intcpt	intcpt	intcpt	intcpt	intcpt
Adolescent Efficacy	strong	strong	strict	slope	slope	intcpt	intcpt	intcpt	slope
Positive Relations with Child	strong	strong	strict	slope	slope	intcpt	intcpt	intcpt	slope

Note. Intcpt = intercept, partial = partial intercept invariance. Empty cells indicate model non-convergence

Table 6

Confirmatory Factor Analytic Model of Validity Invariance Tests across Adolescent Reports of Language Brokering for Mothers and Fathers

		Parent-Child Conflict				Teen Depressive Symptoms			
				Father	Mother			Father	Mother
Factor	**Invariance Type**	**$\Delta\chi^2$**	**Δdf**	***b (SE)***	***b (SE)***	**$\Delta\chi^2$**	**Δdf**	***b (SE)***	***b (SE)***
Adolescent Report									
Burden-Adolescent	free			.83 (.17)***	.67 (.14)***			.77 (.32)*	.92 (.29)**
	slope	3.84	1			.87	1		
	intercept	.00	1			.22	1		
Burden-Parent	free			.26 (.08)***	.19 (.06)**			.18 (.14)	.32 (.12)**
	slope	3.34	1			2.43	1		
	intercept	21.07	1***			.04	1		
Disrespect / Role Reversal	free			.67 (.15)***	.64 (.13)***			.73 (.28)**	.76 (.27)**
	slope	.29	1			.10	1		
	intercept	.11	1			.02	1		
Positive Relations	free			−.05 (.07)	−.07 (.07)			−.05 (.12)	−.10 (.12)
	slope	.45	1			.59	1		
	Intercept	13.77	1**			3.30	1		
Negative Feelings	free			.76 (.16)***	.70 (.15)***			1.17 (.33)***	1.27 (.31)***
	slope	.87	1			.53	1		
	intercept	.36	1			.00	1		
Efficacy	free			.24 (.22)	.11 (.19)			−1.02 (.47)*	−.67 (.39)
	slope	1.18	1			2.07	1		
	intercept	3.85	1*			.80	1		
Independence	free			.03 (.07)	.08 (.07)			−.04 (.15)	.05 (.14)
	slope	2.87	1			1.41	1		
	intercept	2.28	1			.51	1		
Parent Report									
Burden-Parent	free			.77 (.27)**	.51 (.27)			1.72 (.65)**	1.38 (.49)**
	slope	.65	1			.33	1		
	intercept	.57	1			.51	1		

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		Parent-Child Conflict				Teen Depressive Symptoms			
				Father	Mother			Father	Mother
Factor	**Invariance Type**	**$\Delta\chi^2$**	**Δdf**	***b (SE)***	***b (SE)***	**$\Delta\chi^2$**	**Δdf**	***b (SE)***	***b (SE)***
Role Reversal	free			.29 (.09)**	.28 (.08)**			.43 (.20)*	.35 (.16)*
	slope	.03	1			.18	1		
	intercept	.94	1			.48	1		
Disrespect	free			.35 (.09)***	.26 (.11)*			.59 (.21)**	.77 (.18)***
	slope	.75	1			.85	1		
	intercept	.56	1			.48	1		
Negative Feelings	free			.64 (.18)***	.57 (.20)**			1.44 (.47)**	.66 (.36)
	slope	.13	1			3.93	1*		
	intercept	.43	1			3.16	1 [a]		
Efficacy	free			−.30 (.20)	−.06 (.21)			−.80 (.50)	−.64 (.38)
	slope	1.10	1			.13	1		
	intercept	.08	1			.03	1		
Positive Relations	free			.10 (.10)	.22 (.12)			−.24 (.24)	.13 (.30)
	slope	.90	1			1.55	1		
	intercept	.11	1			.32	1		

Note.

[a] Model comparison was made with the freely estimated model, and slope was allowed to vary across group. Non-significant Chi-square tests indicate that invariance can be established.