



Published in final edited form as:

*J Youth Adolesc.* 2009 April ; 38(4): 572–586. doi:10.1007/s10964-008-9358-8.

## Mother-Adolescent Language Proficiency and Adolescent Academic and Emotional Adjustment Among Chinese American Families

**Lisa L. Liu,**

Clinical Psychology Program, University of California, Los Angeles, CA, USA, e-mail: lisalliu@ucla.edu

**Aprile D. Benner,**

Population Research Center, University of Texas at Austin, Austin, TX, USA

**Anna S. Lau,** and

Department of Psychology, University of California, Los Angeles, CA, USA

**Su Yeong Kim**

Department of Human Development and Family Sciences, School of Human Ecology, University of Texas at Austin, Austin, TX, USA

### Abstract

This study examined the role of adolescents' and mothers' self-reports of English and heritage language proficiency in youth's academic and emotional adjustment among 444 Chinese American families. Adolescents who were proficient in English tended to exhibit higher reading achievement scores, math achievement scores, and overall GPA. Mothers who were English proficient tended to have children with higher academic achievement and fewer depressive symptoms. Results also indicated that adolescents' heritage language maintenance was associated with positive adjustment, particularly amongst foreign-born youth and for youth whose parents were highly proficient in the heritage language. Mother-adolescent match in heritage language proficiency was related to higher math achievement scores and overall GPA. Additionally, higher heritage language proficiency was associated with fewer depressive symptoms for foreign-born but not U.S.-born youth. Overall, the findings suggest that proficiency in both the English and heritage language may confer advantages to Chinese American youth.

### Keywords

Language proficiency; Chinese American families; Academic achievement; Emotional adjustment

### Introduction

A number of studies on youth in immigrant families identify generational differences in academic and emotional adjustment between foreign-born and US-born youth. In general, studies on Latinos and Asian Americans have found that foreign-born youth tend to have higher school performance, achieve higher levels of education, hold more positive school attitudes, and report lower levels of emotional distress than their US-born peers (Fulgini 1998; Glick and White 2004; Kaufman 2004; Willgerodt and Thompson 2006). Several explanations have

been invoked to explain this immigrant advantage, such as immigrant optimism (Kao 1995; Suarez-Orozco and Suarez-Orozco 2001) and heritage cultural values emphasizing obligation to the family (Fuligni 1998). Another popular trend in the literature has been to focus on acculturation, with some suggesting that individuals who acculturate towards the host culture may assume risk factors associated with the host culture and lose protective factors from the heritage culture that promote achievement (e.g., Wong 1999; Fuligni 1998). Several investigators have also surmised that parent–child differences in acculturation may explain generational differences in youth adjustment. Specifically, foreign-born youth may be less likely than US-born youth to experience cultural gaps with their parents, resulting in less family conflict and fewer child adjustment problems (Costigan and Dokis 2006; Farver et al. 2002; Szapocznik and Kurtines 1993; Tardif and Geva 2006).

One aspect of acculturation that may be particularly important in understanding family functioning and child adjustment in immigrant families is language acculturation and the extent to which parents and children are able to communicate in English and/or their native tongue. Language may be distinctly important in predicting children’s academic outcomes as language skills are inherently intertwined with cognition and school achievement (Bialystok 1999; Bialystok et al. 2005; Geva and Genessee 2006). In addition, children’s proficiency in English and/or their heritage language may help determine the peer groups they socialize with and may relate to their exposure to language- or race-based discrimination. Language acculturation may therefore play an important role in immigrant youth’s academic and social-emotional functioning.

Several researchers have also suggested that parent–child differences in acculturation may be associated with children’s well-being (Phinney and Ong 2002; Farver et al. 2002; Pawliuk et al. 1996). While few studies have examined language acculturation specifically, intra-familial differences in language use may potentially result in difficulties communicating, fewer shared activities, and less reciprocal support and involvement between parents and children, all of which may relate to poorer youth academic and emotional adjustment (Tseng and Fuligni 2000; Costigan and Dokis 2006).

Taken together, the extant research supports an increased focus on both heritage and English language proficiency of parents and youth and (mis)match in proficiency as important variables in their own right in predicting academic and emotional adjustment of youth in language-minority families. Although language acculturation patterns may be proximal predictors of academic and emotional adjustment in children of immigrant families, they tend to be overlooked or obscured in current research. Many studies examining the relationship between family acculturation and youth adjustment have often incorporated language as one of several domains of acculturation measures or have used language use as a proxy for changes in cultural values, yet they do not identify the acquisition or maintenance of language proficiency as the variable of interest. Moreover, while a few studies have explicitly examined the impact of language use and proficiency within immigrant families (Costigan and Dokis 2006; Ibanez et al. 2004; Hao and Bonstead-Bruns 1998; Tseng and Fuligni 2000), none have comprehensively examined the main effects of the host and heritage language, the interactive effects within parents and children individually, and also the interactive effects between parent and child language in a single study. Thus, the current study sought to more clearly examine how the variation in English and heritage language proficiency (in both child and parent) may independently and interactively predict youth adjustment.

### **Youth Language Proficiency and Developmental Outcomes**

Youth English proficiency is positively related to academic achievement in terms of higher reading and spelling scores, higher academic expectations, and better perceived school competence in immigrant and minority youth (Ibanez et al. 2004; Riggs and Greenberg

2004; Hao and Bonstead-Bruns 1998). In a study with Chinese Canadian adolescents, Lee and Chen (2000) also found that communication competence in the host language was negatively related to psychological problems such as depression and loneliness. However, the evidence is less clear concerning the relationship between heritage language proficiency and youth developmental competencies and adjustment. Some evidence suggests that heritage language proficiency is related to higher math scores and higher grades in school (Hao and Bonstead-Bruns 1998) but is unrelated to youth mental health (Lee and Chen 2000). The observed differences may also be racially/ethnically specific, as Guglielmi (2008) observed that heritage language proficiency was predictive of later English reading ability and high school achievement for Latino American but not Asian American students.

These mixed findings on youth heritage language proficiency highlight two major issues that warrant further attention. First, much of what we know about the correlates of language proficiency patterns is based on research with Latino American youth, but issues in language might be quite different for Asian subgroups. For example, among Latino children, phonological processing in Spanish is positively associated with English reading skills (Durgunoglu et al. 1993; Quiroga et al. 2002), and Spanish vocabulary predicts later English reading comprehension (Proctor et al. 2006). However, less robust findings of cross-linguistic transfer is evident for Asian American children for whom there is less shared phonology and orthography between the heritage language and English (Guglielmi 2008). As such, it is unclear whether previous findings from research with Latinos (particularly the relation between heritage language proficiency and academic outcomes) are generalizable to Asian immigrant groups. Second, there may potentially be discontinuity between youth academic and emotional outcomes. Factors that are positively associated with academic outcomes may not necessarily also be positively associated with mental health outcomes, as recent research has shown that high achieving Asian American students often report poor psychological and social adjustment (Qin 2008; Choi et al. 2006; Greene et al. 2006). Whether language proficiency patterns are related differentially to youth academic achievement and emotional adjustment remains to be examined.

### **Parents' Language Proficiency and Youth Developmental Outcomes**

Immigrant parents' English and heritage language proficiency have been largely unexamined as potential correlates of youth's developmental outcomes. Yet immigrant parents who are proficient in English may be more likely to be involved in their children's education, resulting in higher levels of youth academic achievement. Although direct evidence of the relationship between parent language proficiency and youth outcomes is lacking, research suggests that immigrant parents who are comfortable speaking English report higher levels of involvement with their children's education (Garcia Coll et al. 2002) and that Mexican American youth who reported that their families spoke more English at home reported higher academic motivation and educational aspirations (Plunkett and Bamaca-Gomez 2003).

### **Interactions Between Heritage and Host Language Proficiencies Within Individuals and Families**

The current study explores how heritage and English language proficiencies interact within individuals (e.g., parent or child) to influence youth adjustment. A number of studies indicate that immigrant and minority youth who are bicultural tend to exhibit lower levels of acculturative stress, less depression, and higher academic achievement compared to youth with low or high levels of acculturation toward the host culture (Lam 2006; Bacallao and Smokowski 2005; Miranda and Umhoefer 1998; Feliciano 2001). Research on bilingualism has also found that children who are proficient in both their heritage language and English show clear advantages in cognitive flexibility over monolingual English children (Bialystok 1999; Bialystok and Codd 1997; Bialystok and Herman 1999; Bialystok et al. 2005) and that

these skills in turn confer advantages for later school achievement (Cummins 1979;Geva and Genessee 2006). This suggests particularly positive developmental outcomes for youth who exhibit high levels of both English and heritage language proficiency. However, very little is known about how parental biculturalism and bilingualism may affect youth adjustment. It does appear that biculturalism among immigrant Asian American adults is associated with positive mental health (Ying 1995;Ying et al. 2000), and it stands to reason that parental bicultural adjustment may confer some environmental advantage to youth.

In addition to within-person interactions, it is also possible that (mis)match between parent and youth language proficiency may relate to youth outcomes. Large differences between parents' and adolescents' acculturation (both global and linguistic acculturation) are predictive of youth maladjustment (e.g., higher depression and delinquency), whereas small differences or a match between parent and adolescent acculturation are negatively associated with youth maladjustment (Crane et al. 2005; Farver et al. 2002; Weaver and Kim 2008; Ying and Han 2007). For example, Costigan and Dokis's (2006) study with Chinese Canadian families found that when mothers reported high Chinese language use, children's Chinese language use was positively associated with achievement motivation and negatively associated with family conflict and youth depressive symptoms. Similarly, Weaver and Kim (2008) found that when Chinese American parents were minimally proficient in English and children were minimally proficient in Chinese, parents exhibited the least supportive parenting, and children reported the highest levels of depressive symptoms. The authors suggested that adolescents who could not readily engage in meaningful and reciprocal communication with their parents were less likely to feel supported by them. This interpretation is corroborated by Tseng and Fuligni's (2000) finding that adolescents from immigrant families who reported mutual communication in their heritage language with their parents reported the highest levels of cohesion and discussion. However, as few studies have provided a thorough and extensive focus on the relationship between language proficiency patterns and youth outcomes in immigrant families, these associations deserve further examination.

## The Current Study

In the current study, we focused on both youth and maternal self-reports of English and heritage language proficiency in predicting youth academic and emotional adjustment. Based on the extant literature, we hypothesized that Chinese American adolescents who were proficient in English would exhibit higher scholastic achievement, particularly in the area of language arts (i.e., reading scores). We made no hypotheses regarding whether heritage language proficiency would affect academic achievement, although some evidence suggests that heritage language proficiency may be related to content-specific academic areas for Asian Americans, such as mathematics (Hao and Bonstead-Bruns 1998). In relation to mothers' language proficiency, we hypothesized that maternal English proficiency would be positively associated with youth academic and emotional well-being. No hypotheses were provided regarding how maternal Chinese language proficiency would relate to youth outcomes, given the dearth of research in this area.

Both English and heritage language proficiency were examined concurrently in order to illuminate the independent effects of fluency in each language on adolescent outcomes over and beyond their potential overlapping or shared effects. While English and heritage language fluency may be positively associated, as they may be related to an underlying general language competence, research on acculturation and first language attrition suggests a probable negative association between English and heritage language proficiency for youth in immigrant families (Ryder et al. 2000). Thus our analysis permitted an exploration of the association between English and heritage language fluency variables as well as the independent or unique effects of English and heritage language fluency on adolescent outcomes.

Based on research on biculturalism/bilingualism, we hypothesized that youth who were proficient in both English and Chinese would have higher levels of academic achievement and lower levels of depression than their monolingual English or English-limited peers. Likewise, we hypothesized that youth with bilingual parents would show advantages in scholastic achievement and emotional adjustment owing to familial bicultural adaptation.

In relation to potential interactions between English and heritage language proficiency in predicting youth adjustment, we hypothesized that youth English and heritage language proficiency would interact in predicting emotional and academic outcomes, such that the association between heritage language proficiency and adjustment would be strongest among youth who are also proficient in English. Given the lack of research on the relationship between parental biculturalism and youth adjustment, no hypotheses were put forth regarding how maternal English and Chinese proficiency may interact to predict youth academic and emotional adjustment.

Given research on parent–child acculturation differences, we hypothesized that parent–child match on both English and heritage language proficiency would result in high levels of academic and emotional adjustment. That is, we hypothesized that there would be a positive association between parents' language proficiency (English or Chinese) and youth adjustment when youth were also proficient in the same language. This is because when parents are proficient in English or their heritage language, higher levels of youth language proficiency in the same language would indicate parent–child match, which should be associated with better adjustment.

Lastly, we examined how these relationships differed across youth nativity status. Research suggests that acculturation in different cultural domains may be differentially related to adjustment for US-born versus foreign-born Chinese (Ying et al. 2000). English language proficiency may be particularly important for foreign-born youth for whom mastery of a new language is generally necessary to achieve academic/occupational success and feelings of competence in a new environment. In contrast, US-born youth raised within the U.S. as their native context may not face the same challenge of learning an entirely new language. In addition, heritage language proficiency may also confer greater psychological advantages to foreign-born versus US-born youth, as it may help them maintain strong ties with both their families and the Chinese American community. In contrast, Chinese language proficiency may be less advantageous for US-born youth, as it may be less crucial for their daily functioning and identity (Kim and Chao in press).

## Method

### Participants

Participants were 444 Chinese American families participating in a short-term longitudinal study. Adolescents were initially recruited from seven middle schools in Northern California. Slightly more than half of the sample (54%) was female ( $M$  age = 13.0 years,  $SD$  = 0.73). 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 Guangdong province of Southern China. With respect to adolescent generational status, with the exception of 7 adolescents who arrived in the U.S. as 13 year olds, all of the remaining foreign born adolescents can be considered 1.5 generation because they immigrated to the U.S. prior to or at age 12 (Kasinitz et al. 2008). Given that close to 90% of the parents were foreign born, only a small percentage of adolescents were 3rd generation or beyond. Most adolescents resided in two-parent homes (86%). The median annual family income range was \$30,001–\$45,000, although the income distribution exhibited considerable variability, with 11% reporting less than \$15,000 and 9% reporting more than \$105,000.



## Procedure

After gaining consent from school districts, middle schools with a substantive population of Asian American students (at least 20% of student body) were selected, resulting in seven eligible schools. Chinese American families were then identified by school administrators using self-reported data on ethnicity that was collected when the students first enrolled in school. In total, 47% of those families identified by school administrators consented to participate in the study. A packet of 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. Families received nominal compensation for their participation.

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. Of the families who received questionnaire packets, 76% completed the surveys. The majority of adolescents used the English version questionnaires (85%), while over 70% of fathers and mothers completed the Chinese version.

## Measures

All measures were assessed in middle school, when students were in 7th or 8th grade. Table 1 displays descriptive statistics for each measure along with correlations among the variables.

**Language Proficiency**—Given previous research suggesting that mothers play a particularly important role in socializing Chinese American children (Liu et al. in press) and that mother–child match in language proficiency tends to be more influential than father–child match in language proficiency (Costigan and Dokis 2006), this study focused on mother's language proficiency as a predictor of youth outcomes. Language proficiency in speaking/understanding both Chinese and English was assessed with two items (e.g., how well do you speak and understand Chinese). Mothers and adolescents self-reported their perceived ability on a response scale ranging from 1 (*not well*) to 5 (*extremely well*). We used responses on these items to create two types of language proficiency variables—centered continuous variables and categorical groups. First, we centered adolescents' English ( $M = 4.29$ ) and Chinese ( $M = 3.37$ ) proficiency scores as well as mothers' English ( $M = 2.43$ ) and Chinese ( $M = 3.97$ ) proficiency scores. Using these centered scores, we created a series of interaction terms: English-by-Chinese for adolescents and mothers separately, adolescent English-by-mother English, and adolescent Chinese-by-mother Chinese.

Second, we created categorical variables based on adolescent and mother responses to the language proficiency items. Response anchors were used as the theoretical basis for the categorization because individuals who are deemed proficient in a given language should be confident in their fluency. As Krashen et al. (1998) describe, speakers who know a language fairly well but are “language shy” become reluctant to speak the language. Thus, for both English and Chinese, if the respondent reported speaking and understanding the given language either very well (4) or extremely well (5), they were identified as proficient in the language. Ratings of moderately well (3), slightly well (2), or not well (1) were identified as limited proficiency. Coincidentally, utilizing a median split for the variables would have also resulted in the split occurring at the rating of very well (4) for adolescents' English, adolescents' Chinese, and mothers' Chinese. However, the median split for mothers' English fell at slightly well (2).

These categories were then used to create cross-language proficiency groups. Individuals who were highly proficient in both English and Chinese were labeled bilingual (190 adolescents and 47 mothers). Individuals who were highly proficient in English but had limited proficiency in Chinese were labeled English monolinguals (195 adolescents and 49 mothers). Those highly proficient in Chinese but with limited English proficiency were labeled limited English (39 adolescents and 246 mothers). Those with limited proficiency in both English and Chinese were labeled semilinguals (17 adolescents and 62 mothers).

**Adolescent Outcomes—Depressive Symptoms**—Given the research findings that Asian American youth tend to experience high levels of depressive symptoms (Okazaki 1997; National Council for Health Statistics/Center for Disease Control and Prevention 1997), adolescents' depressive symptoms were examined as an indicator of emotional adjustment. Adolescents' depressive symptomology was assessed with the 20-item Center for Epidemiological Studies Depression Scale (Radloff 1977). The CES-D assesses depressed affect (I felt depressed), somatic symptoms (my sleep was restless), lack of well-being (I enjoyed life, reverse scored), and interpersonal difficulties (I felt people disliked me). Adolescents indicated how often they had experienced each symptom during the past week on a scale ranging from 0 (*rarely or none of the time*) to 3 (*most of the time*). Higher mean scores reflected greater depressive symptoms (Cronbach's  $\alpha = 0.87$ ).

**Adolescent Outcomes—Academic Performance**—We relied on three measures of adolescents' academic outcomes—reading and math achievement test scores and grade point average (GPA)—all drawn from adolescents' school records. Achievement test scores were drawn from performance on the Stanford Achievement Test (SAT9). Adolescents received a percentile rank in both reading and mathematics. Grade point average was calculated based on adolescents' grades in all courses for the fall and spring semester (0 = F, 4 = A). Although GPA is not standardized across schools, it is a commonly used indicator of overall academic achievement and provides a measure of achievement across various subjects taught in schools (beyond performance on reading and math). Grades in physical education were excluded from the GPA calculation.

### Data Analysis Strategy

We employed three sets of analyses to test relations among the model constructs. First, we used analyses of variance (ANOVA) to determine whether adolescents' outcomes varied as a function of adolescent or mother language proficiency group. Second, we used ordinary least squares (OLS) regression to explore the influence of four sets of variables on adolescent outcomes: a) adolescent English and Chinese proficiency and the cross-language interaction, b) mother English and Chinese proficiency and the cross-language interaction, c) adolescent and mother English proficiency and the cross-informant interaction, and d) adolescent and mother Chinese proficiency and the cross-informant interaction. Maternal education, adolescent gender, and adolescent grade were included as covariates in the OLS regressions.

The final set of analyses—multiple group analyses—explored whether the strength of relationships between language proficiency and adolescent outcomes were robust for U.S. and foreign-born adolescents. Multiple group analyses were conducted using *Mplus* 4.2 (Muthen and Muthen 2006). Using methods recommended by Bollen (1989) and Kenny (2005), we used a stepwise process for multi-group comparisons. In each step, we included additional constraints on model parameters and observed whether doing so led to a significant decrease in overall model fit, using chi-square difference tests. We examined group differences for each of our four sets of centered, continuous language proficiency variables across each adolescent outcome. Using adolescent language proficiency as an example, we imposed constraints in this

order: 1) influence of adolescent English proficiency, 2) influence of Chinese proficiency, and 3) influence of English-by-Chinese proficiency.

## Results

### Language Proficiency Group Differences in Adolescent Achievement and Depressive Symptoms

The first set of analyses utilized MANOVA and ANOVA models to examine possible differences in outcomes across distinct language proficiency groups for adolescents and mothers. We compared outcomes across three adolescent language proficiency groups: monolingual English, bilingual, and limited English.<sup>1</sup> Analyses for mother language proficiency groups explored differences across four groups: monolingual English, bilingual, limited English, and semilingual. Two ANOVA models were used to examine adolescent language group differences and mother language group differences on scores of adolescent depressive symptoms. But, because the academic performance variables (reading scores, math scores, and GPA) appeared to be moderately correlated (see Table 1), two MANOVA models were conducted to examine whether the three academic performance variables would differ by adolescent and mother language proficiency groups. The multivariate tests showed that adolescents' language proficiency ( $F(6, 808) = 20.19, p < .01$ ) and mothers' language proficiency ( $F(9, 1161) = 5.40, p < .01$ ) had significant effects on academic performance across the academic measures.

Univariate results for adolescent language groupings, presented in the top panel of Table 2, show significant differences across three of the four outcomes under study. More specifically, English monolingual students had significantly higher reading achievement test scores than bilingual students, and bilingual students, in turn, earned higher reading test scores than their limited English peers. In contrast, for both math achievement test scores and GPA, both English monolinguals and bilingual adolescents exhibited better performance than limited English students; English monolinguals and bilingual students did not differ with each other on these measures. No differences were found across adolescent language proficiency groups in scores for adolescent depressive symptoms.

For mother language proficiency categories, univariate results are presented in the bottom panel of Table 2. For reading achievement test scores, adolescents with monolingual English or bilingual mothers scored higher than those with limited English or semilingual mothers. Adolescents with monolingual English mothers also exhibited higher math test scores than adolescents with limited English or semilingual mothers and earned higher GPAs than their peers with limited English mothers. As with adolescent language proficiency group analyses, no differences were observed in scores for adolescent depressive symptoms across mother language proficiency groups.

### English and Chinese Proficiency and Their Interaction in Predicting Achievement and Depressive Symptoms

The second set of analyses examined whether English proficiency, Chinese proficiency, or the English-by-Chinese proficiency interaction predicted adolescents' achievement test scores, GPA, or depressive symptoms. Separate regression analyses were conducted using adolescent language proficiency scores and mothers' language proficiency scores. Adolescents' gender and maternal education were entered as covariates. Because the present sample of Chinese American families was of lower socioeconomic status relative to the Census Reports of U.S. population of Chinese Americans, maternal education was dichotomized as less than high

---

<sup>1</sup>Semilingual adolescents were excluded from analyses due to limited sample size ( $n = 17$ ).



school diploma versus high school diploma or more. In addition, because the mean level of adolescents' depressive symptoms appeared to differ by grade level ( $t = -2.35, p < .05$ ), grade was also entered as a covariate for regressions that examined depressive symptoms as the dependent variable. Grade was not entered as a covariate in the academic performance outcomes because they did not differ by grade level.

As shown in the Panel A of Table 3, in our analyses for adolescents' dual language proficiency, we observed effects for three of our four outcomes of interest. In particular, for reading achievement test scores, we observed main effects but not interaction effects for English and Chinese proficiency, such that as English proficiency increased, adolescents' reading test scores increased, whereas when Chinese proficiency increased, reading test scores declined. For mathematics achievement test scores, an identical pattern of main effects emerged. In addition, we observed a significant effect of the English-by-Chinese interaction. In Fig. 1a, the two lines depict the simple slopes for adolescents scoring one standard deviation above and below the sample mean on Chinese proficiency. As seen in Fig. 1a, adolescent English proficiency was positively associated with mathematics test scores when adolescents were also high on Chinese proficiency ( $\beta = .39, p < .01$ ), but this relationship was not significant when adolescents were low on Chinese proficiency ( $\beta = .07, ns$ ). For GPA, we observed a main effect for adolescents' English proficiency, with those higher in English proficiency earning higher GPAs. No main effects or interactions were observed for adolescents' depressive symptoms.

An examination of the influence of mothers' English and Chinese proficiency revealed one consistent pattern. As shown in Panel B of Table 3, mothers who reported higher English proficiency had adolescents with higher reading and math achievement test scores, higher GPAs, and lower levels of depressive symptoms. Mothers' Chinese proficiency was unrelated to adolescents' outcomes, as was the mother English-by-Chinese interaction.

### **Mother-Adolescent Language Proficiency and Their Interactions in Predicting Adolescent Achievement and Depressive Symptoms**

We next explored potential joint and interactive effects of language proficiency scores in the adolescent-mother dyad. First, we conducted separate analyses examining adolescent and mother English proficiency and the dyad interaction (mother-by-adolescent English proficiency) on the achievement test scores, GPA, and depression symptoms. Second, we used adolescent and mother Chinese proficiency and the dyad interaction as predictors. Results for the mother-adolescent dyad English proficiency revealed main effects that were nearly identical to those previously discussed. As displayed in Panel C of Table 3, we observed main effects for adolescent English language proficiency (higher proficiency associated with better reading and math achievement test scores and higher GPAs) and for mother English language proficiency (higher proficiency associated with higher reading achievement test scores and fewer depressive symptoms). The adolescent-by-mother English language proficiency interaction was not significantly related to any of the outcomes under study.

When we examined the influence of the adolescent-mother Chinese language proficiency scores on adolescent outcomes, we again found similar results for main effects. The bottom panel of Table 3 shows few associations between Chinese language proficiency and adolescent outcomes. The sole exception was a significant main effect for adolescents' Chinese language proficiency on reading achievement test scores. While main effects were generally negligible, we found that the adolescent-mother Chinese language proficiency interaction exerted its influence on two of the four outcomes examined. More specifically, the adolescent-mother Chinese language proficiency interaction was significantly associated with adolescents' mathematics achievement test scores and depressive symptoms. Figure 1b, c depict the simple slopes for adolescents scoring one standard deviation above and below the sample mean on Chinese language proficiency. Figure 1b illustrates that mothers' Chinese language proficiency

was marginally negatively associated with adolescents' mathematics achievement test scores when adolescents were low on Chinese language proficiency ( $\beta = -.10, p = .10$ ). Conversely, mothers' Chinese language proficiency trended toward a positive association with adolescents' mathematics achievement test scores when adolescents were high on Chinese language proficiency, but this association was not significant ( $\beta = .13, p = .14$ ). Figure 1c shows that mothers' Chinese language proficiency was negatively associated with adolescents' depressive symptoms when adolescents were high on Chinese language proficiency ( $\beta = -.21, p < .05$ ) but not when adolescents were low on Chinese language proficiency ( $\beta = .02, ns$ ).

### Multiple Group Analyses

We conducted multiple group analyses exploring the influence of adolescents' nativity status, a construct that theoretically exerts varying degrees of influence on adolescents' achievement and distress. As previously noted, we used a stepwise process for multi-group comparisons. We tested the strength of relationships for models examining individual language proficiency and the associated interactions as well as mother-adolescent language proficiency and their interactions.

As shown in the top panel of Fig. 2, the relationship between adolescents' English proficiency and reading achievement test scores was stronger for foreign-born youth than for U.S. born. We also observed that foreign-born youth who were proficient in Chinese reported fewer depressive symptoms, whereas there was no relationship between Chinese proficiency and depressive symptoms for U.S. born adolescents. The relationship between mother language proficiency (English and Chinese) and their association with adolescent outcomes did not differ as a function of adolescents' nativity status.

We observed one significant difference in analyses examining adolescent and mother Chinese language proficiency and their interactions in predicting adolescent outcomes. As shown in the bottom panel of Fig. 2, the relationship between adolescents' Chinese language fluency and reading achievement test scores were significant for foreign-born adolescents, but not for those born in the U.S. No nativity differences in the modeled relationships emerged for adolescent and mother English language proficiency or their interaction.

### Discussion

The objective of this study was to examine how English and heritage language proficiency may be associated with youth academic and emotional adjustment in Chinese American families. Among the key findings was that youth English language proficiency was related to better youth academic outcomes, including higher reading and math achievement scores and higher GPA. These findings were consistent with previous research linking English proficiency to school achievement among youth in language-minority families (Ibanez et al. 2004; Riggs and Greenberg 2004; Hao and Bonstead-Bruns 1998). In the current study, the association between English language proficiency and reading achievement was particularly strong for foreign-born youth, for whom the hurdle of learning a new language may have been necessary for achieving better reading scores. These findings are inconsistent with the notion that increasing acculturation is accompanied by declines in academic achievement. Indeed, previous studies have shown that first generation youth tend to outperform second and third generation youth in school achievement (e.g., Fuligni 1998; Glick and White 2004). It may be that while linguistic acculturation may contribute to greater academic competence, other characteristics associated with later generational status (e.g., changes in cultural values, family obligations and expectations, and youth motivation) may undermine academic achievement.

In addition, although adolescent English proficiency was related to better youth academic outcomes, it was unrelated to adolescent depressive symptoms. These findings are consistent

with research suggesting discontinuity between youth academic and emotional outcomes among Asian American youth (Choi et al. 2006; Greene et al. 2006; Qin 2008). While there is much to learn about what accounts for this paradoxical relationship between academic and psychological outcomes among Asian Americans, this study suggests that the benefits of English language proficiency do not appear to apply equally across academic and emotional domains. As such, it remains important for future research to continue to examine how predictors may be related differentially to various developmental domains among Asian American youth.

Youth who achieved higher reading and math scores and higher GPAs also tended to have mothers who were highly proficient in English. However, it appeared that parent-child match on English language proficiency was inconsequential for this sample. Rather, youth with high levels of English proficiency exhibited high levels of academic achievement regardless of their mothers' English abilities. With regard to emotional adjustment, maternal English proficiency was negatively associated with youth depressive symptoms, which may indicate that English proficient mothers were able to provide higher levels of support to their children both academically and emotionally. For example, English proficiency may allow mothers to become more involved in their children's education both at home and at school, which may bolster academic outcomes, and shared English proficiency may also bolster communication with their children, allowing increased emotional support.

Youth and maternal Chinese language proficiency, on the other hand, were relatively unrelated to youth outcomes. Moreover, we generally did not find the anticipated benefits of bilingualism in our sample. Results from the ANOVA analyses indicated that although bilingual youth tended to do just as well as monolingual English youth, bilingual youth did not exhibit higher levels of academic achievement and lower levels of depression than their monolingual English peers. Rather, monolingual English youth appeared to have an advantage on reading achievement compared to bilingual youth. However, regression analyses did reveal that youth English language proficiency was positively associated with math achievement scores only amongst youth who were also highly proficient in Chinese, indicating some academic advantages to being bilingual. It may be that the anticipated advantages associated with bilingualism may not have been reflected in reading achievement scores or overall GPA, as these outcome measures may not be sensitive to the cognitive advantages of bilingualism, such as mental flexibility and executive functioning.

Although we found a clear advantage for English proficiency with our sample, Chinese language proficiency appeared to be differentially related to youth outcomes across generations. For example, for foreign born youth, higher Chinese language proficiency was associated with lower reading achievement scores. There are a couple of potential explanations for this finding. First, data on language acculturation among the foreign-born youth in this sample conformed to a unidimensional model of linguistic acculturation, such that youth who reported high Chinese proficiency tended to report low on English proficiency. In contrast, the US-born youth's English and Chinese language proficiency were unrelated, consistent with a bidimensional model of linguistic acculturation. Such differences in models of acculturation for foreign-born versus US-born Chinese American youth have been noted previously in the literature (e.g., Ryder et al. 2000). Second, for foreign-born youth, Chinese proficiency may be a proxy for the number of years of schooling in a Chinese-speaking country and conversely fewer years of education in the U.S. Fewer years of English language instruction received by immigrant youth would certainly compromise their reading achievement. This may further explain why for U.S. born youth (exposed to English language instruction at an early age), heritage language maintenance does not appear to compromise reading achievement scores.

On the other hand, Chinese language proficiency was protective against depressive symptoms for foreign-born but not U.S.-born youth. For foreign-born youth, heritage language maintenance may help preserve youth's ties with both their families and the Chinese American community, creating a social support network that fosters emotional well-being. Although it is unclear why these benefits of Chinese language proficiency do not extend to the second generation, it may be that Chinese language proficiency may not play as much of an integral role in sustaining social relationships for U.S.-born youth. For example, Ying et al. (2000) observed that U.S.-born youth were more likely to socially affiliate with Americans and less likely to socially affiliate with Chinese than foreign-born youth.

Chinese language proficiency also appeared to be particularly salient when both children and parents were matched on Chinese language ability. In particular, maternal Chinese language proficiency was negatively related to youth academic achievement (i.e., math scores) when youth were low on Chinese language proficiency, but not when they were highly proficient in Chinese. Perhaps parents who were unable to communicate with children in their heritage language were less able to support their children's academic pursuits. In addition, youth whose mothers were highly proficient in Chinese reported fewer depressive symptoms only if they were themselves proficient in Chinese. This is consistent with Weaver and Kim's (2008) hypothesis that parent-child match in language is likely to lead to greater levels of parent-child communication, which in turn leads to higher levels of parental involvement and support for the child, and fewer depressive symptoms. Therefore, it appeared that parent-child match in heritage language proficiency was important for youth's academic and emotional adjustment.

Given this line of reasoning, one might anticipate that parent-child match in English proficiency would also be related to more positive youth outcomes. However, in this study, parent-child match in English was unrelated to youth outcomes in this study, which is consistent with what Costigan and Dokis (2006) found in their study with Chinese Canadian families. Likewise, Tseng and Fuligni (2000) found that adolescents who mutually communicated with their mothers in their heritage language, reported closer relationships and greater discussion of concerns with their mothers than adolescents who mutually communicated with their mothers in English. Perhaps, despite immigrant parents' efforts to communicate to their children in English, they may lack the degree of comfort with and fluency in English that their children possess, and therefore may not be able to fully appreciate their children's viewpoints or express their concerns in English (Tseng and Fuligni 2000). Without mutual comfort in the heritage language, the sharing of intimacy and special lessons may elude immigrant families. "What is lost are the bits of advice, the *consejos* parents should be able to offer children in their everyday interactions with them" (Wong-Fillmore 1991, p. 343). In contrast, a mismatch in parent-child English proficiency may not be detrimental to youth adjustment, because immigrant parents want their children to learn English well to succeed where English is the language of influence, even if the parents themselves are not English proficient (Costigan and Dokis 2006).

The results of this study should be considered in light of a few limitations. First, the sample for this study was recruited from an ethnically dense, urban area, which may have influenced the language use and proficiency of these families. For example, of the study sample, less than one-quarter of mothers were English monolingual or bilingual, and more than half of youth were either bilingual or spoke limited English. Moreover, it is also important to note that almost all parents in our sample were born outside the U.S., which may have also influenced parents' ability to learn the English language and the degree to which they emphasized maintaining heritage language proficiency in their families. As a result, the study findings may not necessarily generalize to families living in more ethnically-isolated or rural communities, nor later generations of Chinese American families. Moreover, given that only 25% of the

adolescents were born outside of the U.S., we may not have had sufficient power to detect all instances for which the relationship between language proficiency and adolescent outcomes varied by adolescent nativity status.

Second, the language measures used in this study were the respondents' self-reported ability to speak and understand English and Chinese. Self-reported proficiency in these languages may have been contaminated by a number of factors, including one's sense of ethnic identity, subjective sense of confidence or comfort in using a particular language, and differences in perceptions of proficiency versus actual use of language (Portes and Schauffler 1994). Therefore, the use of objective assessments of language proficiency may result in differing patterns of relationships between youth adjustment outcomes and English and heritage language proficiency. Additionally, only two items were used to assess mothers' and adolescents' language proficiency; more comprehensive measures would bolster the reliability of the data.

Lastly, our findings were based on cross-sectional data and thus do not support causal directionality. For example, although it may be surmised that youth English proficiency is necessary for scholastic success, it is also possible that academic gains may motivate youth to continue learning more English. Alternately, both English proficiency and academic achievement are both influenced by third variables such as verbal intelligence. Future studies should use longitudinal data to clarify the direction of the relationships between English and heritage language proficiency and youth outcomes.

Despite these limitations, the results of this study provide evidence that language acculturation patterns may be proximal predictors of academic and emotional adjustment in children of immigrant families. The present findings suggest that while youth English language proficiency is associated with positive youth adjustment, youth's heritage language maintenance also confers some advantages, particularly amongst foreign born youth and for youth whose parents are also highly proficient in the heritage language. Taken together, our findings suggest that it may be important for children from immigrant families to not only become proficient in English, but also to retain their heritage language.

## Acknowledgments

Support for this research was provided through awards to Dr. Su Yeong Kim from (1) Eunice Kennedy Shriver NICHD R03HD051629 (2) Office of the Vice President for Research Grant/Special Research Grant and Summer Research Assignment from the University of Texas at Austin (3) American Psychological Foundation/Council of Graduate Departments of Psychology, Ruth G. and Joseph D. Matarazzo Grant (4) California Association of Family and Consumer Sciences, Extended Education Fund (5) American Association of Family and Consumer Sciences, Massachusetts Avenue Building Assets Fund and (6) NICHD R24HD042849 grant awarded to the Population Research Center at the University of Texas at Austin.

## References

- Bacallao ML, Smokowski PR. "Entre dos mundos" (between two worlds): Bicultural skills training with Latino immigrant families. *The Journal of Primary Prevention* 2005;26(6):485–509.10.1007/s10935-005-0008-6 [PubMed: 16283531]
- Bialystok E. Cognitive complexity and attentional control in the bilingual mind. *Child Development* 1999;70(3):636–644.10.1111/1467-8624.00046
- Bialystok E, Codd J. Cardinal limits: Evidence from language awareness and bilingualism for developing concepts of number. *Cognitive Development* 1997;12:85–106.10.1016/S0885-2014(97)90031-9
- Bialystok E, Herman J. Does bilingualism matter for early literacy? *Bilingualism: Language and Cognition* 1999;2:35–44.10.1017/S1366728999000139
- Bialystok E, Luk G, Kwan E. Bilingualism, biliteracy, and learning to read: Interactions among languages and writing systems. *Scientific Studies of Reading* 2005;9:43–61.10.1207/s1532799xssr0901\_4



- Bollen, KA. *Structural Equations with Latent Variables*. New York: John Wiley & Sons; 1989.
- Choi H, Meininger JC, Roberts RE. Ethnic differences in Adolescents' Mental Distress, Social Stress and Resources. *Adolescence* 2006;41:163–283.
- Costigan CL, Dokis DP. Relations between parent–child acculturation differences and adjustment with immigrant families. *Child Development* 2006;77(5):1252–1267.10.1111/j.1467-8624.2006.00932.x [PubMed: 16999796]
- Crane DR, Ngai SW, Larson JH, Hafen M Jr. The influence of family functioning and parent-adolescent acculturation on North American Chinese adolescent outcomes. *Family Relations* 2005;54:400–410.10.1111/j.1741-3729.2005.00326.x
- Cummins J. Linguistic interdependence and the educational development of bilingual children. *Review of Educational Research* 1979;49:221–251.
- Durgunoglu AY, Nagy WE, Hancin-Bhatt BJ. Cross-language transfer of phonological awareness. *Journal of Educational Psychology* 1993;85(3):453–465.10.1037/0022-0663.85.3.453
- Farver JM, Narang SK, Bhadha BR. East meets West: Ethnic identity, acculturation, and conflict in Asian Indian families. *Journal of Family Psychology* 2002;16(3):338–350.10.1037/0893-3200.16.3.338 [PubMed: 12238415]
- Feliciano C. The benefits of biculturalism: Exposure to immigrant culture and dropping out of school among Asian and Latino youths. *Social Science Quarterly* 2001;82(4):865–879.10.1111/0038-4941.00064
- Fulgini AJ. The adjustment of children from immigrant families. *Current Directions in Psychological Science* 1998;7(4):99–103.10.1111/1467-8721.ep10774731
- Garcia Coll C, Akiba D, Palacios N, Bailey B, Silver R, DiMartino L, et al. Parental involvement in children's education: Lessons from three immigrant groups. *Parenting, Science and Practice* 2002;2(3):303–324.
- Geva, E.; Genessee, F. First-language oral proficiency and second-language literacy. In: August, D.; Shanahan, T., editors. *Developing literacy in second-language learners: Report of the National Literacy Panel on Language-Minority Children and Youth*. Mahwah, NJ: Lawrence Erlbaum Associates; 2006. p. 185-195.
- Glick JE, White MJ. Post-secondary school participation of immigrant and native youth: The role of familial resources and educational expectations. *Social Science Research* 2004;33:272–299.10.1016/j.ssresearch.2003.06.001
- Greene M, Way N, Pahl K. Trajectories of perceived adult and peer discrimination among Black, Latino, and Asian American adolescents: Patterns and psychological correlates. *Developmental Psychology* 2006;42:218–238.10.1037/0012-1649.42.2.218 [PubMed: 16569162]
- Guglielmi RS. Native language proficiency, English literacy, academic achievement, and occupational attainment in limited-English-proficient students: A latent growth modeling perspective. *Journal of Educational Psychology* 2008;100(2):322–342.10.1037/0022-0663.100.2.322
- Hao L, Bonstead-Bruns M. Parent–child differences in educational expectations and the academic achievement of immigrant and native students. *Sociology of Education* 1998;71(3):175–198.10.2307/2673201
- Ibanez GE, Kuperminc GP, Jurkovic G, Perilla J. Cultural attributes and adaptations linked to achievement motivation among Latino adolescents. *Journal of Youth and Adolescence* 2004;33(6):559–568.10.1023/B:JOYO.0000048069.22681.2c
- Kao G. Asian Americans as model minorities? A look at their academic performance. *American Journal of Education* 1995;103(2):121–159.10.1086/444094
- Kasinitz, P.; Mollenkopf, JH.; Waters, MC.; Holdaway, J. *Inheriting the city: The children of immigrants come of age*. Cambridge, MA, US: Harvard University Press; 2008.
- Kaufman J. The interplay between social and cultural determinants of school effort and success: An investigation of Chinese-immigrant and second-generation Chinese students' perceptions towards school. *Social Science Quarterly* 2004;85(5):1275–1298.10.1111/j.0038-4941.2004.00276.x
- Kenny, DA. Multiple group models [Electronic Version]. 2005. Retrieved April 20, 2006 from <http://davidakenny.net/cm/mgroups.htm>
- Kim SY, Chao RK. Heritage language fluency, ethnic identity, and school effort of immigrant Chinese and Mexican adolescents. *Cultural Diversity & Ethnic Minority Psychology*. in press

- Krashen, SD.; Tse, L.; McQuillan, J. Heritage language development. Culver City, CA: Language Education Associates; 1998.
- Lam BT. Self-construal and socio-emotional development among Vietnamese-American adolescents: An examination of different types of self-construal. *International Journal of Behavioral Development* 2006;30(1):67–75.10.1177/0165025406062125
- Lee BK, Chen L. Cultural communication competence and psychological adjustment: A study of Chinese immigrant children's cross-cultural adaptation in Canada. *Communication Research* 2000;27(6): 764–792.10.1177/009365000027006004
- Liu LL, Lau AS, Chen AC, Dinh KT, Kim SY. The influence of maternal acculturation, neighborhood disadvantage, and parenting on Chinese American adolescents' conduct problems: Testing the segmented assimilation hypothesis. *Journal of Youth and Adolescence*. in press
- Miranda AO, Umhoefer DL. Depression and social interest differences between Latinos in dissimilar acculturation stages. *Journal of Mental Health Counseling* 1998;20(2):159–172.
- Muthen, LK.; Muthen, BO. Mplus user's guide. Vol. 4. Los Angeles, CA: Muthen & Muthen; 1998–2006.
- National Council for Health Statistics/Center for Disease Control and Prevention. Monthly vital statistics report. Vol. 46. Hyattsville, MD: U.S. Public Health Service; 1997.
- Okazaki S. Sources of ethnic differences between Asian American and White American college students on measures of depression and social anxiety. *Journal of Abnormal Psychology* 1997;106:52–60.10.1037/0021-843X.106.1.52 [PubMed: 9103717]
- Pawliuk N, Grizenko N, Chan-Yip A, Gantous P, Matthew J, Nguyen D. Acculturation styles and psychological functioning in children of immigrants. *The American Journal of Orthopsychiatry* 1996;66:111–121.10.1037/h0080161 [PubMed: 8720648]
- Phinney JS, Ong AD. Adolescent-parent disagreements and life satisfaction in families from Vietnamese- and European-American backgrounds. *International Journal of Behavioral Development* 2002;26:556–561.10.1080/01650250143000544
- Plunkett SW, Bamaca-Gomez MY. The relationship between parenting, acculturation, and adolescent academics in Mexican-origin immigrant families in Los Angeles. *Hispanic Journal of Behavioral Sciences* 2003;25(2):222–239.10.1177/0739986303025002005
- Portes A, Schauffler R. Language and the second generation: Bilingualism yesterday and today. *The International Migration Review* 1994;28:640–661.10.2307/2547152
- Proctor CP, August D, Carlo MS, Snow C. The intriguing role of Spanish language vocabulary knowledge in predicting English reading comprehension. *Journal of Educational Psychology* 2006;98(1):159–169.10.1037/0022-0663.98.1.159
- Qin DB. Doing well vs. feeling well: Understanding family dynamics and the psychological adjustment of Chinese immigrant adolescents. *Journal of Youth and Adolescence* 2008;37:22–35.10.1007/s10964-007-9220-4
- Quiroga T, Lemos-Britton Z, Mostafapour E, Abbott RD, Berninger VW. Phonological awareness and beginning reading in Spanish-speaking ESL first graders: Research into practice. *Journal of School Psychology* 2002;40(1):85–111.10.1016/S0022-4405(01)00095-4
- Radloff LS. The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement* 1977;1(3):385–401.10.1177/014662167700100306
- Riggs NR, Greenberg MT. Moderators in the academic development of migrant Latino children attending after-school programs. *Journal of Applied Developmental Psychology* 2004;25(3):349–367.10.1016/j.appdev.2004.04.005
- Ryder AG, Alden LE, Paulhus DL. Is acculturation unidimensional or bidimensional? A head-to-head comparison in the prediction of personality, self-identity, and adjustment. *Journal of Personality and Social Psychology* 2000;79(1):49–65.10.1037/0022-3514.79.1.49 [PubMed: 10909877]
- Suarez-Orozco, C.; Suarez-Orozco, MM. Children of immigration. The developing child. Cambridge, MA, US: Harvard University Press; 2001.
- Szapocznik J, Kurtines WM. Family psychology and cultural diversity: Opportunities for theory, research, and application. *The American Psychologist* 1993;48:400–407.10.1037/0003-066X.48.4.400

- Tardif CY, Geva E. The link between acculturation disparity and conflict among Chinese Canadian immigrant mother–adolescent dyads. *Journal of Cross-Cultural Psychology* 2006;37:191–211.10.1177/0022022105284496
- Tseng V, Fuligni AJ. Parent-adolescent language use and relationships among immigrant families with East Asian, Filipino, and Latin American backgrounds. *Journal of Marriage and the Family* 2000;62:465–476.10.1111/j.1741-3737.2000.00465.x
- Weaver SR, Kim SY. A person-centered approach to studying the linkages among parent–child differences in cultural orientation, supportive parenting, and adolescent depressive symptoms in Chinese American families. *Journal of Youth and Adolescence* 2008;37:36–49.10.1007/s10964-007-9221-3
- Willgerodt MA, Thompson EA. Ethnic and generational influences on emotional distress and risk behaviors among Chinese and Filipino American adolescents. *Research in Nursing & Health* 2006;29:311–324.10.1002/nur.20146 [PubMed: 16847910]
- Wong SK. Acculturation, peer relations, and delinquent behavior of Chinese-Canadian youth. *Adolescence* 1999;34:108–119.
- Wong-Fillmore L. When learning a second language means losing the first. *Early Childhood Research Quarterly* 1991;6:323–346.10.1016/S0885-2006(05)80059-6
- Ying Y. Cultural orientation and psychological well-being in Chinese Americans. *American Journal of Community Psychology* 1995;23:893–911.10.1007/BF02507020 [PubMed: 8638555]
- Ying Y, Han MH. The longitudinal effect of intergenerational gap in acculturation conflict and mental health in Southeast Asian American adolescents. *The American Journal of Orthopsychiatry* 2007;77(1):61–66.10.1037/0002-9432.77.1.61 [PubMed: 17352586]
- Ying Y, Lee PA, Tsai JL. Cultural orientation and racial discrimination: Predictors of coherence in Chinese American young adults. *Journal of Community Psychology* 2000;28(4):427–442.10.1002/1520-6629(200007)28:4<427::AID-JCOP 5>3.0.CO;2-F

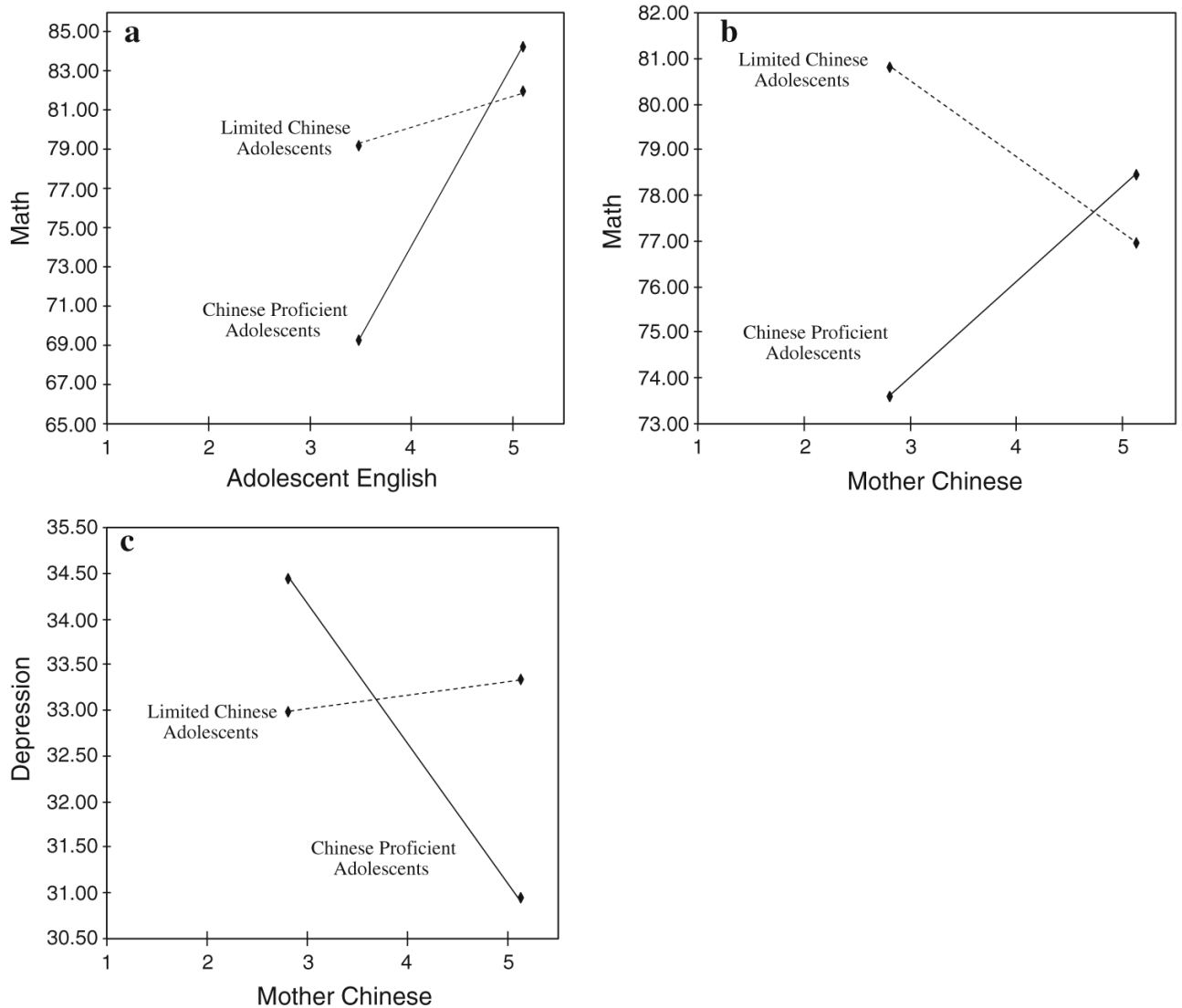
## Biographies

**Lisa L. Liu** is a doctoral student in the Clinical Psychology Program at the University of California, Los Angeles, where she received her Masters in Clinical Psychology. Her research interests focus on the mental health of immigrant and minority families, including the role of parenting practices, parent–child relations, and socio-cultural factors on youth adjustment.

**Aprile D. Benner** is a postdoctoral fellow at the Population Research Center at the University of Texas at Austin. She received her Ph.D. in Education at the University of California, Los Angeles. Her research interests center on adolescent development of low-income and minority youth, specifically investigating how adolescents navigate transition experiences in the early life course and how social contexts influence development.

**Anna S. Lau** is an Assistant Professor in the Department of Psychology at the University of California, Los Angeles where she also received her Ph.D. in Clinical Psychology. A major objective of her research is to enhance the effectiveness of psychosocial interventions for ethnic minority families and children at risk of parenting and child behavior problems. She has authored over 30 articles in the fields of children’s mental health services, child maltreatment, and minority family adjustment.

**Su Yeong Kim** is an Assistant Professor in the School of Human Ecology, Department of Human Development and Family Sciences at the University of Texas at Austin. She received her Ph.D. in Human Development from the University of California, Davis. Her research interests include the role of cultural and family contexts that shape the development of adolescents in immigrant and minority families in the U.S.

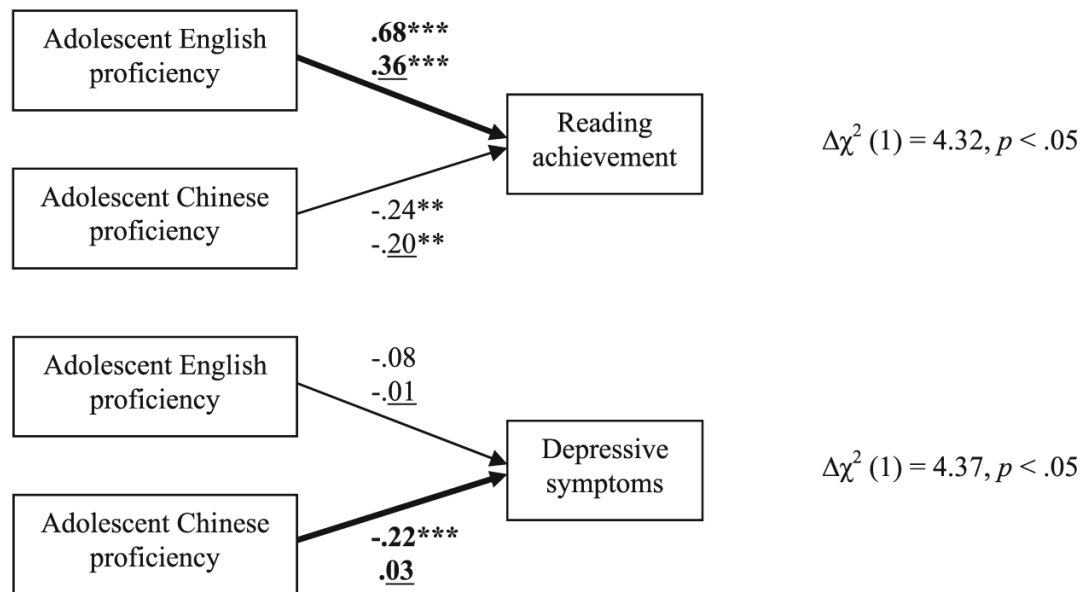
**Fig. 1.**

**a** Regression lines for associations between adolescents' English language proficiency and mathematics achievement test scores as moderated by adolescents' Chinese language proficiency.

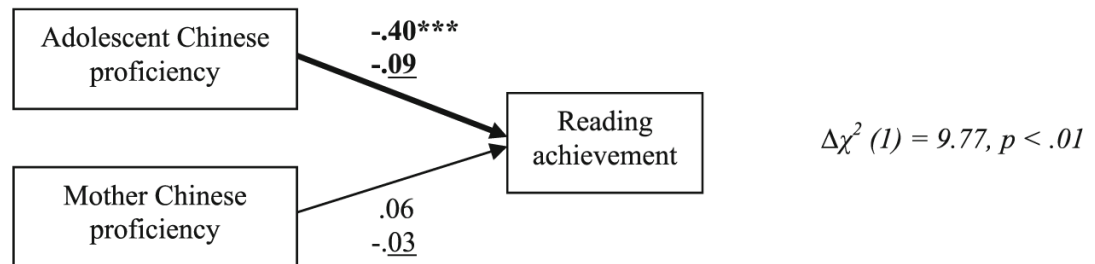
**b** Regression lines for associations between mothers' Chinese language proficiency and adolescents' mathematics achievement test scores as moderated by adolescents' Chinese language proficiency.

**c** Regression lines for associations between mothers' Chinese language proficiency and adolescents' depressive symptoms as moderated by adolescents' Chinese language proficiency.

### Adolescent Nativity & Adolescent English and Chinese Proficiency



### Adolescent Nativity & Adolescent and Mother Chinese Proficiency



**Fig. 2.** Multiple group analysis results for nativity (foreign-born versus US-born) and adolescents' reading achievement and depressive symptoms. *Note:* Underlined coefficients denote US-born adolescents. Bold paths and associated arrows denote significant moderation by nativity. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$



Table 1

Bivariate correlations, means, and standard deviations of study variables

	<i>M (SD)</i>	1	2	3	4	5	6	7	8	9	10	11	12
1 Adolescent Chinese proficiency	3.37 (1.15)	—											
2 Adolescent English proficiency	4.29 (0.81)	-.20**	—										
3 Mother Chinese proficiency	3.97 (1.16)	.45**	-.18**	—									
4 Mother English proficiency	2.43 (1.33)	-.49**	.33**	-.24**	—								
5 Reading scores	58.97 (20.44)	-.27**	.53**	-.14**	.34**	—							
6 Math scores	78.12 (19.01)	-.11*	.29**	-.09	.17**	.69**	—						
7 GPA	3.45 (0.59)	-.06	.23**	-.10	.16**	.42**	.48**	—					
8 Depressive symptoms	32.84 (8.42)	-.00	-.06	-.04	-.13**	-.15**	-.17**	-.16**	—				
9 Mother education (% less than HS diploma)	24%	-.22**	.13**	.04	.39**	.20**	.07	.17**	-.03	—			
10 Nativity (% US-born)	75%	-.34**	.45**	-.19**	.31**	.28**	.09	.18**	-.04	.12*	—		
11 Gender (% female)	54%	.07	.05	.00	-.04	.02	-.00	.31**	.06	.04	-.01	—	
12 Grade level (% 7th grade)	48%	.04	.02	.00	-.00	.02	-.05	.02	.11*	.01	-.02	.05	—

\*  $p < 0.05$ ,\*\*  $p < 0.01$

**Table 2** Means and standard deviations for language proficiency groups and *F*-values for tests of group differences

	English monolingual (N = 195)		Bilingual (N = 190)		Limited English (N = 39)		<i>F</i>		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
<i>Adolescent language proficiency groups</i>									
Reading tests	65.60 <sup>a</sup>	17.50	59.27 <sup>b</sup>	18.40	29.08 <sup>c</sup>	16.28	63.77 <sup>**</sup>		
Math tests	80.28 <sup>a</sup>	16.98	79.03 <sup>a</sup>	17.95	63.74 <sup>b</sup>	26.00	12.63 <sup>**</sup>		
GPA	3.54 <sup>a</sup>	.53	3.46 <sup>a</sup>	.56	3.14 <sup>b</sup>	.70	7.79 <sup>**</sup>		
Depression	32.27 <sup>a</sup>	7.37	32.94 <sup>a</sup>	8.67	33.83 <sup>a</sup>	10.11	.71		
<hr/>									
	English monolingual (N = 49)		Bilingual (N = 47)		Limited English (N = 246)		Semilingual (N = 62)		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
<i>Mother language proficiency groups</i>									
Reading tests	72.96 <sup>a</sup>	18.34	67.43 <sup>a</sup>	19.08	55.44 <sup>b</sup>	20.04	56.08 <sup>b</sup>	19.85	14.15 <sup>**</sup>
Math tests	86.29 <sup>a</sup>	14.65	80.23 <sup>ab</sup>	18.77	76.90 <sup>b</sup>	19.66	76.73 <sup>b</sup>	19.34	3.64 <sup>*</sup>
GPA	3.64 <sup>a</sup>	.39	3.55 <sup>ab</sup>	.53	3.39 <sup>b</sup>	.61	3.48 <sup>ab</sup>	.56	3.19 <sup>*</sup>
Depression	31.40 <sup>a</sup>	7.94	30.92 <sup>a</sup>	9.22	32.96 <sup>a</sup>	8.23	33.63 <sup>a</sup>	7.04	1.51

Note: Within each row, means not sharing a superscript differ at  $p < .05$ .

\*  $p < 0.05$ ,

\*\*  $p < 0.01$

Table 3

English and Chinese proficiency as predictors of reading tests, math tests, GPA, and depressive symptoms

	Reading tests			Math tests			GPA			Depression		
	<i>B</i>	<i>SE</i>	$\beta$	<i>B</i>	<i>SE</i>	$\beta$	<i>B</i>	<i>SE</i>	$\beta$	<i>B</i>	<i>SE</i>	$\beta$
<i>Panel A</i>												
Adolescent grade level	1.36	1.76	.03	1.12	1.87	.03	.38	.05	.33**	.08	.04	.11*
Adolescent gender	4.63	1.94	.10*	1.09	2.06	.03	.18	.06	.14**	.03	.04	.04
Maternal education	-3.21	.81	-.18**	-1.71	.86	-.10*	.00	.03	.00	-.04	.05	-.05
Adolescent Chinese proficiency	12.01	1.16	.47**	5.44	1.23	.23**	.13	.04	.19**	-.02	.02	-.06
Adolescent English proficiency	1.27	.99	.06	3.37	1.05	.16**	.02	.03	.03	-.02	.03	-.04
Adolescent Chinese × English										.02	.02	.04
Overall model significance	$F(3, 429) = 37.05^{***}$			$F(3, 431) = 9.89^{***}$			$F(3, 428) = 16.97^{***}$			$F(3, 437) = 1.11$		
<i>Panel B</i>												
Adolescent grade level	1.09	1.99	.03	.57	1.94	.02	.39	.05	.34**	.09	.04	.11*
Adolescent gender	4.73	2.39	.11*	.32	2.33	.01	.16	.07	.13*	.03	.04	.03
Maternal education	-1.40	.94	-.08	-.38	.92	-.02	-.04	.03	-.07	-.03	.02	-.09
Adolescent Chinese proficiency	4.73	.89	.30**	2.30	.87	.16**	.05	.02	.12*	-.05	.02	-.15*
Adolescent English proficiency	.53	.59	.05	-.20	.57	-.02	.01	.02	.02	.00	.01	.02
Overall model significance	$F(3, 394) = 11.37^{***}$			$F(3, 396) = 2.47^*$			$F(3, 393) = 14.90^{***}$			$F(3, 400) = 2.39^*$		
<i>Panel C</i>												
Adolescent grade level	.90	1.77	.02	.66	1.89	.02	.39	.05	.34**	.09	.04	.11*
Adolescent gender	3.88	2.07	.09 <sup>&lt;</sup>	.35	2.21	.01	.15	.06	.12*	.02	.04	.02
Maternal education	11.70	1.27	.46**	5.86	1.36	.25**	.11	.04	.16**	.00	.05	.00
Adolescent English proficiency	2.50	.81	.16**	1.36	.87	.09	.04	.03	.08	.02	.03	.05
Adolescent Chinese proficiency	-0.53	.97	-.03	-.84	1.03	-.05	-.01	.03	-.02	-.05	.02	-.15*
Overall model significance	$F(3, 393) = 35.26^{***}$			$F(3, 395) = 7.82^{***}$			$F(3, 392) = 17.24^{***}$			$F(3, 399) = 1.91^{\dagger}$		
<i>Panel D</i>												
Adolescent grade level	1.56	2.03	.04	.57	1.95	.02	.38	.06	.33**	.08	.04	.10*
Adolescent gender										.03	.04	.04

	Reading tests			Math tests			GPA			Depression		
	<i>B</i>	<i>SE</i>	$\beta$	<i>B</i>	<i>SE</i>	$\beta$	<i>B</i>	<i>SE</i>	$\beta$	<i>B</i>	<i>SE</i>	$\beta$
Maternal education	6.64	2.28	.15 <sup>***</sup>	1.31	2.20	.03	.21	.06	.17 <sup>***</sup>	-.03	.05	-.03
Adolescent Chinese proficiency	-4.05	1.03	-.23 <sup>***</sup>	-1.38	.99	-.08	.02	.03	.04	-.02	.02	-.05
Maternal Chinese proficiency	-.26	1.06	-.01	.30	1.02	.02	-.04	.03	-.09	-.03	.02	-.09
Maternal $\times$ adolescent Chinese	.74	.69	.06	1.46	.67	.13 <sup>*</sup>	.02	.02	.06	-.04	.01	-.14 <sup>*</sup>
Overall model significance	$F(3, 394) = 9.18^{***}$			$F(3, 396) = 2.42^*$			$F(3, 393) = 14.20^{***}$			$F(3, 400) = 2.12^*$		

\*  $p < 0.05$ ,\*\*  $p < 0.01$ ,†  $p < 0.10$