Published in final edited form as:

Cultur Divers Ethnic Minor Psychol. 2009 January ; 15(1): 27–37. doi:10.1037/a0013052.

Heritage Language Fluency, Ethnic Identity, and School Effort of Immigrant Chinese and Mexican Adolescents

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Abstract

The assumption that heritage language fluency is an essential component of ethnic identity, and that both factors are important predictors of school effort, was tested across two ethnic groups spanning multiple generations of immigrants. The sample consisted of 207 immigrant Chinese (first- and second-generation) and 354 Mexican (first-, second-, and third-generation) adolescents. The findings demonstrate that heritage language fluency is an important component of ethnic identity for second-generation Mexican adolescents, but not for second-generation Chinese adolescents. Thus, for this latter group, it may not be appropriate to use identity measures which assess heritage language fluency as a part of the general dimension of ethnic identity. The findings also show that higher reading and writing skills in Spanish are significant predictors of school effort for all three generations of Mexican adolescents; in addition, higher ethnic identity exploration is related to the school effort of second generation Mexican adolescents.

Keywords

Heritage Language; Ethnic Identity; School Effort; Chinese; Mexican; Adolescence

In light of the growing number of ethnic minority adolescents in the U.S., scholars have begun to develop models to examine culture-specific pathways to developmental outcomes in ethnic minority adolescents. One such model is the Model of Racial Socialization/Ethnic Socialization and Identity developed by the Study Group in Race, Culture and Ethnicity (Johnson, Spicer, & Hughes; see this special issue). This model posits how culture-specific processes, such as racial or ethnic socialization, lead to school achievement and psychosocial functioning in adolescents through the mediating processes of adolescent self-esteem or adolescent racial or ethnic identity. Studies following this approach have examined factors influencing racial/ethnic identity, such as parents' racial socialization or parents' messages about race-related issues, and how both are related to the development of ethnic minority children. However, most of these studies have focused on African Americans (Hughes & Johnson, 2001). Currently, scholars know little about the applicability of the Model of Racial/Ethnic Socialization and Identity for ethnic groups that are comprised primarily of recent immigrants. The goal of the present

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investigation is to test components of this model on a sample of more recent immigrant groups in the U.S. – specifically, Chinese and Mexican adolescents. Latinos and Asians account for the majority of immigrants to the United States (Suarez-Orozco, 2001), with Mexicans and Chinese representing the largest ethnic sub-groups among Latinos and Asians, respectively.

In studies of youth from immigrant families, researchers cannot assume that parents are knowledgeable about, or even aware of, the racial dynamics between their ethnic group and that of the larger host society (Kim, Gonzales, Stroh, & Wang, 2006). Thus, to adequately test the Model of Racial Socialization/Ethnic Socialization and Identity on immigrant adolescents, it is important to consider factors that may better capture their ethnic identity experiences. The present study posits that for ethnic groups comprised primarily of recent immigrants like Chinese and Mexican adolescents, their heritage language fluency may contribute to their sense of ethnic identity. Thus, one goal of this investigation is to examine the importance of heritage language fluency in relation to the ethnic identity of Chinese and Mexican adolescents across different generations of immigrants. Second, the paper also examines, as part of the Model of Racial/Ethnic Socialization and Identity, the linkage between ethnic identity and achievement, focusing specifically on school effort.

Ethnic Identity

Ethnic identity is socially constructed (Sodowsky, Kwan, & Pannu, 1995), and adolescence has been described as a period of identity formation (Erikson, 1968). According to Phinney and colleagues (Phinney & Chavira, 1992; Phinney, Romero, Nava, & Huang, 2001), minority adolescents and children of immigrants are likely to develop, as part of their social identity, a sense of membership in an ethnic group, or an ethnic identity. Rotheram and Phinney's (1987) definition of ethnic identity emphasizes the enculturation of immigrant groups, including the individual's sense of belonging to an ethnic group and the behaviors, feelings, and attitudes that are part of membership in a group. As noted by Isajiw (1990), one aspect of an observable cultural and social behavior is speaking one's heritage language. The current study examines ethnic identity as defined by Rotheram and Phinney, and empirically tests the relevance of Isajiw's observation that heritage language fluency is an important component of ethnic identity among adolescents from immigrant families. Existing measures of ethnic identity, such as the General Ethnicity Questionnaire (Tsai, Ying, & Lee, 2000), use heritage language fluency as a component of ethnic identity. Before relying on such measures, it is important to empirically test whether heritage language fluency is essential in defining the ethnic identity of immigrant groups, both for those who are born in the U.S. and for those who are not (foreign-born). Second-generation immigrant youth may be comparable in their attachment and exploration of ethnic identity to their first-generation counterparts. However, if ethnic identity measures are also based on heritage language fluency, the lower heritage language fluency scores of second-generation immigrants may lower their ethnic identity scale scores.

Ethnic Identity and Language

Many scholars assume that heritage language fluency is an essential component of the ethnic identity of immigrant youth (De Vos, 1995; Fishman, 1999; Giles, Bourhis, & Taylor, 1977; Isajiw, 1990), yet few empirical studies have tested this assumption. Research involving immigrant youth must clarify whether heritage language is an essential component of their sense of ethnic identity (Giles et al., 1977). Such studies are of particular interest for the period of adolescence, a stage when identity formation is most salient in life-course development (Erikson, 1968). Noting that various contextual factors have rarely been examined together, the current study considers whether there are differences due to the *generational or immigrant status of youth*, and whether these generational patterns differ among the two largest ethnic immigrant groups in the U.S., Mexicans and Chinese. Previous studies have not given adequate

attention to whether heritage language fluency is a more important component of the ethnic identity of youth born abroad compared to youth who are born in the U.S. to foreign-born parents, and whether or not these generational differences are similar for Mexican and Chinese immigrants.

For immigrant families, use of the heritage language is not simply a necessity for verbal communication, but is also a symbol and exemplification of their ethnic identity (Fishman, 1977; Isajiw, 1990; Padilla, 1999; Suárez-Orozco & Suárez-Orozco, 2001). As De Vos (1995) states, "Language is often cited as a major component in the maintenance of a separate ethnic identity... language undoubtedly constitutes the single most characteristic feature of ethnic identity" (p. 23). Language is considered an indicator of ethnicity because it provides a vehicle for defining a group's distinctiveness, designating between the in-group and the out-group (Giles et al., 1977; Padilla, 1999) by signaling membership in a particular group. However, language not only promotes group feelings, but it also provides a method of transmitting its cultural heritage (Giles et al., 1977). Immigrant parents often use the heritage language to teach their children about the social norms and attitudes of their heritage cultures (Bailey, 2004). However, the opportunities that youth born in the U.S. have to learn their heritage language, especially reading and writing, may be more limited than those of youth born in countries where the heritage language is dominant.

Ethnic Identity and Adolescent School Outcomes

Adolescents' sense of ethnic identity has important consequences for adolescent adjustment. Studies (Dukes & Martinez, 1997; Phinney, 1990; Phinney, Cantu, & Kurtz, 1997) on adolescents find that strong ties to their ethnic group are related to indicators of positive self-regard, such as higher levels of self-esteem and self-confidence. Fewer studies examine the role of ethnic identity in school adjustment, such as the relationship between ethnic identity and school effort. Studies of African American youth have demonstrated that ethnic pride is associated with school achievement, because adolescents who are more affirming of their ethnic identity try to do well in school in order to debunk negative stereotypes of their ethnic group (Fordham, 1988; Sanders, 1997). Murry et al (see this special issue) also found among their sample of African American youth that ethnic pride was associated with openly striving to do well in school, and ultimately with school achievement.

However, countering negative stereotypes as a motivation to do well in school may not be as important to ethnic groups that are predominantly comprised of recent immigrants, such as Latinos and Asian Americans. Many recent immigrants become more familiar with negative stereotypes of their group only as they acculturate or become more knowledgeable about the larger host society. Thus, the basis for their striving in school may be due more to their belief that school success is an important avenue to social mobility, as this is often a primary reason for their immigration to the U.S. (Fuligni & Yoshikawa, 2004; Suárez-Orozco & Suárez-Orozco, 2001). Many immigrant children and their parents bring with them a high value for education, positive attitudes about school, and expectations that they will work hard (Suárez-Orozco & Suárez-Orozco, 2001). Thus, being ethnically identified may reflect this value of education, which may be the impetus for applying themselves in school. Moreover, although Asian immigrants often outperform Latino immigrants academically, Fuligni, Witkow, and Garcia (2005) argue that for both Asians and Latinos, being ethnically identified provides meaning to the self, which in turn is the impetus for setting academic goals and the motivation to do well in school.

Given the emerging evidence for the role of ethnic identity in the level of immigrant adolescents' engagement in school, and given the importance of school success for the future incorporation of new immigrants to the U.S., the current study examines whether or not ethnic identity and heritage language fluency are both significant factors in adolescents' school effort.

Once heritage language fluency is accounted for, it may be that ethnic identity is not significantly related to youths' school effort. This may be particularly true for more recent immigrant youth, as their heritage language fluency may reflect their immigrant value of education more than affirmation and exploration of their ethnic identity would. However, the ethnic identity of youth born in the U.S. may matter more than their fluency in the heritage language.

Additionally, it may be that a particular dimension of ethnic identity is more important for the school effort of different ethnic groups and generations of immigrants. A study by Supple and colleagues (2006) finds that ethnic affirmation is more important than ethnic identity exploration in explaining school achievement. However, it is important also to consider the possibility that engagement in ethnic activities may reflect their connections to immigrant values for succeeding in school, more so than feelings of ethnic affirmation. We therefore attempt to test both the affirmation and exploration dimensions of ethnic identity and their relationships to school effort.

Previous studies have not found significant differences between Latino and Asian American adolescents in their levels of ethnic identity (Phinney, 1992; Roberts et al, 1999; Yancey, Aneshensel & Driscoll, 2001). However, as mentioned above, there are important generational differences within each of these ethnic groups that have not been considered. Moreover, these generational differences may be more pronounced among some ethnic immigrant groups than others. For Chinese youth from immigrant families, attaining fluency in Chinese may be much more difficult than is attaining fluency in Spanish for Mexican youth, especially in states that border Mexico. In other words, it is possible that there are important generational differences in levels of heritage language fluency, and that these generational differences may be more pronounced among Asian students, not only in heritage language fluency but also in their sense of ethnic identity. These generational differences of Chinese and Mexican immigrants may also be reflected in the way ethnic identity and heritage language experiences are related to adolescents' school effort.

Differential Language Issues for Chinese and Mexican Adolescents

Although both Chinese and Mexicans are faced with the challenge of maintaining their heritage languages, these challenges may be particularly salient for Chinese adolescents due to the great structural differences between Chinese and English. Spanish structurally resembles English in that both are Indo-European languages and both share a similar alphabet system. The Chinese written language, on the other hand, is based on pictographs, and children require extensive instruction of the character system in order to master the written language. There is also a lack of a single, unifying spoken language for Chinese immigrants. Because ethnic group members identify more closely with those who speak the same language than with those who simply share the same ethnic background (Giles et al., 1977), the existence of various dialects may create difficulty in promoting group feelings among Chinese immigrants.

Additionally, Spanish has been identified as a higher status language than other immigrant languages (Ryan, Giles, & Sebastian, 1982), mainly because Spanish speakers are the largest group of non-English speakers in the United States (Carranza, 1982). For example, in regions bordering Mexico, such as southern California, adolescents have more exposure to the Spanish language than they do to any other language apart from English; for instance, many streets and cities have Spanish names. In the public school system, Spanish is part of a foreign language program, especially at the secondary school level. The proximity of Los Angeles to Mexico also facilitates circular migration and the continued use of the Spanish language in the greater Los Angeles area (Bourhis & Marshall, 1999; Suárez-Orozco & Suárez-Orozco, 2001). The importance of these environmental conditions is considered in examining the language acculturation challenges of Chinese and Mexican immigrants in the current study.

Generational Issues in Language Fluency and Ethnic Identity

The different language acculturation challenges Chinese and Mexican immigrants face may have relevance for their ethnic identity. For Chinese adolescents, fluency in the heritage language is expected to play a greater role in the ethnic identity of first-generation than in second-generation immigrants. As noted by Chiang (2001), second-generation Chinese adolescents do not see the relevance or importance of learning the heritage language, and are often unmotivated to learn it. As second-generation Chinese youth were born in the U.S., their ethnic identity is more tied to values emphasized by their immigrant parents, especially high academic achievement, than it is to their use of the heritage language (Chiang, 2001). That is, for these American-born youth, speaking Chinese may be perceived as impeding their success in Los Angeles – where the dominant language is English, and where Chinese is perceived as a less prestigious language (Ryan et al., 1982). In addition, because of the relative difficulty of acquiring Chinese, it may be that second-generation Chinese are unable to achieve a level of fluency in the heritage language sufficient to use it as a basis for establishing an ethnic identity.

For Mexicans, fluency in the heritage language may continue to play a role in the ethnic identity of adolescents beyond the first-generation of immigrants. Because of the high status or prevalence of Spanish within the U.S., particularly in communities bordering Mexico, there may be more Spanish language presence in Mexican immigrant families, including those of youth born in the U.S., than is the case for Chinese language presence in Chinese American families. Thus, for Mexicans, fluency in Spanish may continue to be just as salient a factor in establishing a sense of ethnic identity in second-generation immigrants as it is among first-generation immigrants. By the third generation, however, adolescents may experience more difficulty in attaining fluency in the heritage language because their U.S.-born parents may not be fully fluent in Spanish themselves. Thus, for these third-generation youth, fluency in speaking, or reading and writing Spanish, is likely not the most essential factor for how they derive a sense of ethnic identity.

Current Study

The current study posits that there is substantial variation in the language acculturation of youth from immigrant families, such that ethnicity and generational status must be considered together as ethnic-generational groups (e.g., first-generation Chinese, second-generation Chinese; first-generation Mexicans, second-generation Mexicans, third-generation Mexicans). These differences are expected to influence not only the way in which ethnic identity attachment and exploration are experienced, but also the way language fluency and ethnic identity are related to adolescent school effort. As described earlier, there may also be differences in the way ethnic identity attachment, and exploration, are associated with academic outcomes. Thus, all analyses proposed below will test these ethnic identity subscales separately.

Based on the aims above, there are three primary sets of hypotheses to be examined – the first regarding differences in mean levels of language fluency, the second regarding ethnic-generational group differences in the *associations* between heritage language fluency and adolescents' sense of ethnic identity, and the third regarding how both ethnic identity and heritage language fluency are related to adolescents' school effort. The hypotheses for differences in levels of language fluency are the following: (1) among Chinese, the first-generation will be more fluent in the heritage language and less fluent in English than the second-generation, whereas (2) among Mexicans, the differences will not be as pronounced as those observed between the same generations of Chinese. The hypotheses for the associations between heritage language fluency and adolescents' sense of ethnic identity are the following: (1) among Chinese, fluency in the heritage language will be more strongly related to ethnic

identity for the first-generation than for the second-generation, whereas (2) among Mexicans, these generational differences in associations will be less pronounced than those observed among the Chinese. The last hypothesis, involving the outcome of school effort, will be that as immigrant youth are more ethnically identified, particularly in their behaviors or practices, they will be more likely to apply themselves in school, even after accounting for their heritage language fluency. Additionally, this study will explore whether there are similar ethnic-generational patterns for the associations involving ethnic identity and school effort, as well as for those involving heritage language fluency and school effort.

Method

Participants

Samples of 207 self-identified Chinese (98 first-generation and 109 second-generation) and 354 self-identified Mexicans (70 first-generation, 227 second-generation, and 57 third-generation) were selected from a larger sample of 1,755 multi-ethnic adolescents. The first-generation designation is for foreign-born adolescents with foreign-born parents. The second-generation designation is for U.S.-born adolescents with at least one foreign-born parent.¹ The third-generation designation is for U.S.-born adolescents with U.S.-born parents. Although it would have been ideal to have a comparable sample of third generation Chinese adolescents, there were very few (only three) third generation Chinese adolescents, and so they were excluded from the analyses. The U.S. Census Bureau reports that close to 90% of Asian American school-aged children in the U.S. have immigrant parents (U. S. Census, 2001), meaning that there is a very small number of third generation Asian American children available to recruit for research studies.

Seven high schools from the greater Los Angeles area participated.² Schools in the greater Los Angeles area that had higher proportions of Asian immigrant adolescents were selected because the study was part of a larger study of this population. With the exception of one high school, in which all adolescents in the school were included, adolescents were recruited from required courses rather than elective courses. Of all adolescents eligible to participate, less than 24% either refused to participate or their parents denied consent; another 10 % did not receive their parental consent forms or were absent on the day of the study.

There were slightly more female ($n = 327$, 58%) than male adolescents ($n = 233$, 42%) in the study, with one student not reporting his/her gender. The age of the adolescents ranged from 14-18 years, with an overall mean of about 16 ($M = 16.29$, $SD = 0.96$). The mean number of years of residence in the U.S. differed for first-generation Chinese and Mexican immigrants, $t(165) = 5.38$, $p < 0.00$, with Chinese immigrants arriving to the U.S. at slightly older ages, age 8 on average ($SD = 4.48$), than Mexican immigrants, who arrived at about age 5 ($SD = 3.46$). In addition, adolescents' reports of parental educational levels (the average of mother's and father's education) and the proportion of single parent households differed across the ethnic-generational groups in the study [$F(4, 556) = 26.88$, $p < 0.00$] and ($\chi^2(4, N = 555) = 11.67$, $p < 0.05$), respectively]. Lastly, the proportion of Mexican- and Chinese-descent adolescents was not consistent across schools: $\chi^2(65, N = 1,166) = 546.50$, $p < 0.00$. Thus, school context, along with an adolescent's gender, age, parental education, and presence of a single parent in the household, were selected as control variables in the data analyses. We used parental educational level as a proxy for socio-economic status.

¹While some contemporary immigration scholars define the "second-generation" to include the "one-and-a half generation" (those who are foreign-born and migrate during childhood to the U.S.), the "true second generation" is U.S.-born children with an immigrant parent (Zhou, 1997).

²In only six schools did students complete the ethnic identity measure.

Procedure

A passive consent procedure was used to acquire permission for adolescents' participation from parents. Parents responded to or sent back the consent forms only if they did *not* wish their child to participate. All parents received copies of the consent letter in English, Spanish, and Chinese. Adolescents were given 50 minutes to complete paper-and-pencil surveys that included the measures described below. After completion of the surveys, students received snack bars to thank them for their participation.

Students were told that study was investigating the role of the family, especially parenting, in their adjustment and school performance. All measures completed by the students were available in English only. Having only one language version of the survey may have averted potential problems related to measurement nonequivalence of translated items. As stated in the literature, achieving strict measurement equivalence of translated items is ideal but is rarely achieved (Millsap & Kwok, 2004).

Measures

Ethnic identity—The fourteen ethnic identity items in the Phinney's (1992) Multigroup Ethnic Identity Measure (MEIM) were used. Responses were based on Phinney's original 4-point scale, with 1 representing "strongly disagree" and 4 representing "strongly agree."

Phinney (1992) reported the following three dimensions of the MEIM: *Ethnic identity achievement* (7 items) refers to seeking out information about one's ethnicity and spending time learning about the meaning and role of ethnicity in one's life. *Belonging/Affirmation* (5 items) refers to a sense of pride, attachment, and good feelings about one's ethnic group. *Ethnic behaviors* (2 items) refers to participating in the practices of one's ethnic group, such as following ethnic customs.

The original subscales of the ethnic identity measure were modified after conducting exploratory/confirmatory factor analyses on the study sample. These results, along with the internal Chronbach's alphas of the subscales, are reported in the Results section.

Language fluency—The adolescents' fluency in their heritage language and in English were assessed by the following three items: (1) How well do you understand the language when others speak it to you?; (2) How well do you speak the language?; and (3) How well do you read and write the language? All responses were based on a 5-point scale, with 1 being "not at all well" and 5 being "extremely well." The two items for speaking and understanding were averaged together to form a speaking/understanding subscale. The two items showed a high correlation of .88 for the overall sample (.86 for Chinese and .89 for Mexican), suggesting that it is appropriate to combine these two items to create the understanding/speaking subscale for both Chinese and Mexicans. The single reading/writing item with the individual and combined speaking/understanding subscales revealed correlations in the range of .55 to .63 for Chinese and .81 to .87 for Mexicans. Thus, it appeared that at least for the Chinese sample, reading/writing and speaking/understanding represented distinct aspects of language fluency. In summary, the present study assessed heritage language fluency in two forms: one form combined understanding and speaking abilities and another form comprised a single item for reading/writing fluency.

The present study relies on self-reported language abilities, which is the standard method of assessing language ability in large-scale studies, including the U.S. Census (Portes & Hao, 2002). Self-reported language fluency levels are reliable and have high concurrent validity with interview ratings of language ability (Portes & Hao, 2002; Portes & Schauffler, 1994; Smith & Baldauf, 1982). In the current study, variations in the relationship between self-

perceived language fluency levels and adolescents' sense of ethnic identity were examined in five ethnic-generational groups (i.e., first- and second-generation Chinese; and first-, second-, and third-generation Mexicans).

School effort—Students answered several questions to assess school effort, including the number of hours student spends studying per week, how often student completes assignments, and how often student is attentive in classes (Chao, 2001). Responses to the latter items were coded on a 5-point scale ranging from 1 (seldom if ever [0-10% of the time]) to 5 (always or almost always [90-100% of the time]). All items were first standardized, and then scale scores were derived using the mean or average of the standardized items. The reliabilities for Chinese students were low ($\alpha = 0.47$ and 0.49 for first- and second-generation, respectively), but are comparable to those reported by Chao (2001). The reliabilities were higher for Mexican adolescents ($\alpha = 0.63, 0.65, 0.72$ for first-, second-, and third-generation, respectively).

Results

Data Analytic Strategy

Data analyses proceeded in four steps. The first step involved an examination of the factor structure of the ethnic identity measure across generations of Chinese and Mexican adolescents in the study. This step involved conducting exploratory and confirmatory factor analyses of the ethnic identity measure. This was followed by multiple group analyses to examine violations of factorial invariance of the ethnic identity measure across generations of Chinese and Mexican adolescents. Items showing violations in invariance were dropped in subsequent analyses. The second step involved examining mean differences in both heritage language fluency and ethnic identity through Multivariate Analysis of Covariance (MANCOVA), which controlled for potential differences in demographic characteristics. The third step involved examining associations between heritage language fluency and adolescents' sense of ethnic identity through partial correlations which controlled for the demographic characteristics. Multiple group analyses using structural equation modeling, described below, were also conducted to examine whether there were significant differences in the size of the coefficients across generations of Chinese and Mexican adolescents. The last step involved using multiple regression analysis to examine heritage language fluency and adolescents' sense of ethnic identity as potential predictors of adolescents' school effort across generations of Chinese and Mexican adolescents, after controlling for the demographic characteristics. Multiple group analyses were again used to detect significant differences in the size of the coefficients across ethnic-generational groups. This involved estimating a particular path to be constrained to be equal across groups, versus estimating the path to be freely estimated across groups. If the chi-square difference between the two models is significant, the path under consideration is considered to be significantly different from the other.

Factor Analyses of Ethnic Identity Measure

Before proceeding to the research hypotheses, the factor structure of the ethnic identity measure used in the current study was examined more closely. This was necessary in light of studies (Roberts et al., 1999; Spencer, Icard, Harachi, Catalano, & Oxford, 2000) reporting that the MEIM is best represented by two dimensions, rather than the three dimensions used by Phinney (1992) in her original report.

Based on an exploratory³ common factor analysis, two distinct factors emerged for the ethnic identity measure after using principal axes to extract factors with an oblique rotation. The communality estimates for these two factors were 5.12, explaining 39% of the total variance. All items had factor loadings above the recommended 0.30 threshold (Gorsuch, 1983). The first factor was identified as “affirmation/belonging” and the second factor as “exploration.”

Because the sample consisted of two ethnic groups, common factor analysis was performed separately for each group. Similar items loaded on the same factors for both the Mexicans and the Chinese.

Confirmatory⁴ factor analysis was then used to model the factor pattern derived from common factor analysis for the Chinese and Mexican adolescents. Based on the Tucker-Lewis Index (TLI) and Comparative Fit Index (CFI) (with acceptable fit values above 0.90), and the Root Mean Square Error of Approximation (RMSEA) (with acceptable fit values below 0.08), there appeared to be a reasonable fit for Chinese adolescents, with factor loadings ranging from 0.53 to 0.95 (see Table 1). For Mexican adolescents, the fit indexes were all above acceptable values and the factor loadings ranged from 0.37-0.83 (see Table 1).

Measurement Invariance

As the current study compares the ethnic identity experiences of diverse groups of adolescents, it was important to establish measurement invariance of the ethnic identity measure used in the study. In order to assess measurement invariance, a well-fitting baseline model was compared to a model in which the factor loadings (λ 's) were constrained to be equal across ethnic groups (Reise, Widaman, & Pugh, 1993). There was no significant difference in the χ^2 values between the baseline and factor invariance models, $\Delta \chi^2 (11, N = 522) = 18.94, p > .05$, providing evidence for a similar magnitude of factor loadings (λ) between the two ethnic groups. The results suggest that, for both Chinese and Mexican adolescents, the items on the ethnic identity measure were similar in both factor pattern and magnitude of factor loadings.

The measurement invariance test was also performed across the generational groups of each ethnic group. After list-wise deletion, the number of first- and third-generation Mexican adolescents was too small for analysis. The test was therefore restricted to the following three groups: first-generation Chinese, second-generation Chinese, and second-generation Mexicans. The baseline model showed a good fit to the data, but a significant difference emerged between the baseline and factor invariance models, $\Delta \chi^2 (22, N = 405) = 73.40, p < 0.00$. Further comparisons revealed that there were three items that loaded differently across the three groups. The loadings for "spend time learning about culture and history" were significantly different between the first- and second-generation Chinese ($\lambda_{11,2} = 0.77$ versus 0.43). There were also differences between the first-generation Chinese and second-generation Mexicans in the loadings for "happy to be a member of an ethnic group" ($\lambda_{2,1} = 0.87$ versus 0.65) and "participate in cultural practices" ($\lambda_{13,2} = 0.72$ versus 0.92). Therefore, all three of these items were dropped. The final subscales used for the study had 6 items for the subscale of affirmation/belonging and 4 items for the exploration subscale.

The first factor, affirmation/belonging, showed an overall internal consistency level of 0.83, with a range of 0.66 to 0.87 across the ethnic-generational groups. The second factor, exploration, showed an adequate level of internal consistency overall ($\alpha = 0.65$) and ranged from 0.56 to 0.69 across the ethnic-generational groups. Although the alphas for the exploration sub-scale were rather low, this may be due to the fewer number of items in this scale than the other scale.

³Floyd and Widaman (1995) recommend checking for at least a moderate level of correlation at the 0.20 level or above among the items on a scale before proceeding to exploratory factor analysis. Otherwise, items not meeting the criteria will perform poorly in factor analysis. For the Phinney scale (1992), it appeared that the item "I am not very clear about the role of my ethnicity in my life" was especially problematic, since, out of the 13 correlations possible with the other items of the scale, 11 were below the 0.20 threshold. This item was therefore dropped and the factor analysis was performed on the remaining 13 items.

⁴Because items in the ethnic identity measure were non-normally distributed, the recommended weighted least squares (WLS) estimation procedure was used (Byrne, 1998; Floyd & Widaman, 1995; Jöreskog & Sörbom, 1996).

Mean Differences in Heritage Language Fluency and Ethnic Identity Variables

In order to address the hypotheses for differences in mean levels of language fluency across the ethnic-generational groups, a one-way multivariate analysis of covariance (MANCOVA) was conducted. The analyses controlled for variations due to age, gender, parental education, presence of a single parent household, and school context. MANCOVAs were also conducted for the outcome of ethnic identity. The marginal means and standard errors are reported in Table 2, along with the F statistics and significant pair-wise contrasts. Based on the research hypotheses, four group comparisons were specified, 1) between first- and second-generation Chinese, 2) between first- and second-generation Mexicans, 3) between second- and third-generation Mexicans, and 4) between first- and third-generation Mexicans. An alpha level of 0.01 was used (0.05 divided by the four pair-wise contrasts described above) to adjust for the number of comparisons.

Ethnic identity—Within both ethnic groups, there were no differences between the first and the second generations in level of ethnic identity. Differences did emerge among Mexicans, with the third generation reporting lower mean levels than both the first and second generations on both subscales of ethnic identity (all contrasts were significant at the $p < 0.01$ level, whereas the difference between first- and third-generation Mexicans on exploration was significant at the $p < 0.05$ level only).

Language fluency—There was an overall significant difference for the ethnic-generational groups on the two *heritage language fluency* scales. Among Chinese, first-generation immigrants were more fluent than the second generation in their heritage language. Among Mexicans, however, there was no significant difference in the language fluency levels of first- and second-generation adolescents. A difference did emerge when third-generation Mexicans were compared to the first and second generations, with the third generation showing significantly lower levels of heritage language fluency. There was also an overall significant difference across the ethnic-generational groups on the two *English language fluency* scales. Among Chinese, second-generation adolescents were more fluent in English than the first generation. Among Mexicans, first- and second-generation adolescents exhibited similar levels of English fluency. Significant differences among Mexicans did emerge, though, between the first and the third generations, with the third generation being more fluent in reading and writing English than the first generation.

The differences found in fluency levels between first- and second-generation Chinese immigrants, but not between these same generations of Mexican immigrants, may be attributed to the Chinese sample containing a greater proportion of recent immigrants than the Mexican sample. When first-generation immigrants with fewer than seven years of U.S. residency were omitted from the sample, the means for years of residency did not differ across ethnic groups, [$t(117) = 1.43, p = .16$ ($M = 11.43, SD = 2.85$ for Chinese and $M = 12.18, SD = 2.89$ for Mexicans)]; and the sample sizes were also somewhat similar ($N = 56$ for Chinese and $N = 63$ for Mexicans). Analyses of generational differences in heritage language fluency, based on the sample of first-generation immigrants described above, revealed the same findings as those based on the full sample. Analyses of generational differences in English fluency were also generally similar to those based on the full sample.

Associations between Heritage Language Fluency and Adolescents' Sense of Ethnic Identity

The last set of analyses addressed whether heritage language fluency was differentially related to the adolescents' sense of ethnic identity across generations of Chinese immigrants, compared to Mexican immigrants (see Table 3). Partial correlations were computed through structural equation modeling, whereby the language and ethnic identity variables were jointly modeled

as a function of the covariates (γ 's), and the residual correlations between language and ethnic identity variables were specified as ψ 's and reported as partial correlations in Table 3.

A multi-group comparison procedure (Jöreskog & Sörbom, 1996) was used to detect significant differences in the partial correlations across groups. Test statistics, $\Delta \chi^2$, were computed by comparing models with and without group equality constraints on the residual correlations. These $\Delta \chi^2$ values were adjusted for multiple comparisons (i.e., the same four pair-wise comparisons as described previously), using a p-value of 0.01 to denote statistical significance. Significant group differences are denoted through letter superscripts in Table 3.

The partial correlations (controlling for the same demographic variables as in Table 2) revealed that, among first-generation Chinese immigrants, fluency in the heritage language had positive associations with all three measures of ethnic identity, whereas none of the partial correlations was significant among second-generation Chinese. More importantly, these associations were stronger among first-generation than second-generation Chinese, with the exception of exploration. That is, speaking/understanding and reading/writing were more positively associated with affirmation/belonging among first-generation than among second-generation Chinese.

A different generational pattern was found in Mexican immigrants. Among first-generation Mexicans, the associations between heritage language fluency and ethnic identity did not reach statistical significance, but were in the hypothesized positive direction.⁵ Among second-generation Mexicans, positive and significant associations were found in both the bi-variate and partial correlations. Among third-generation Mexicans, the relationships between heritage language fluency and ethnic identity were not significant, with the exception of one bi-variate association.

The partial correlations were examined more closely for Mexicans. After comparison of the associations found for first-generation Mexicans with second- and third-generation Mexicans, and between second- and third-generation Mexicans, no significant differences in the magnitude of the correlations were found.

To address potential problems due to compositional differences in the first-generation immigrant samples, the analyses were replicated using samples of first-generation Chinese and Mexican immigrants who have resided in the U.S. for seven or more years. All of the significant relationships observed in Table 3 were again found with the restricted samples of first-generation Chinese and Mexicans. Moreover, as with the original findings, the same generational differences in the relationship between heritage language fluency and ethnic identity were found for Chinese but not for Mexicans.

Language Fluency and Ethnic Identity as Predictors of Adolescents' School Effort

Table 4 shows the results of regression models of ethnic identity and heritage language fluency as predictors of adolescents' school effort. There was only one ethnic generational group for which a significant overall model was found with significant predictors in the model. In the model for second-generation Mexican adolescents, both ethnic identity exploration and the ability to read and write Spanish, net of each other, emerged as significant positive predictors of adolescent school effort. Although the overall models were not significant for either first-

⁵The lack of significant associations between heritage language fluency and ethnic identity for the first-generation Mexicans could be due to the low level of variance in their scores and the presence of a negatively skewed distribution. First-generation Mexicans showed the highest skewness and kurtosis values on their heritage language fluency scores compared to all other ethnic-generational groups tested, particularly for the speaking/understanding language fluency variable. Even after the scores were transformed, the relationship between heritage language fluency and ethnic identity did not reach statistical significance, possibly due to the small sample size of this ethnic-generational group.

or third-generation Mexican youth, the ability to read and write in Spanish was a significant predictor of their school effort. In addition, being able to speak and understand Spanish was related to lower levels of school effort among third-generation Mexican youth.

Discussion

The present study tested the Model of Racial Socialization/Ethnic Socialization and Identity on a sample of Chinese and Mexican immigrant adolescents. Because this culture-specific model of development in ethnic minorities had been tested primarily with African Americans (Hughes & Johnson, 2001), the present study extended the model to demonstrate its utility for youth from immigrant families. The study demonstrates that language fluency is an important component of ethnic identity for more recent immigrant adolescents. Secondly, the study demonstrates that the linkage between ethnic identity and achievement is indeed generalizable specifically to *Mexican American* youth from immigrant families. That is, both heritage language fluency and ethnic identity make independent and significant contributions to the school effort of second-generation Mexican adolescents. Overall, the Model of Racial Socialization/Ethnic Socialization and Identity is a useful way of conceptualizing culture-specific developmental outcomes in ethnic minority adolescents, including adolescents from immigrant families.

By examining different generations of students of Chinese and Mexican origin, the present study offers a more nuanced perspective on the language and ethnic identity issues of these adolescents. Although previous studies have documented lower language fluency levels of Asian children relative to Latino children (Portes & Hao, 1998), the present study provides empirical evidence that this ethnic difference may be due to the greater generational declines in heritage language fluency of Asian children compared to Latino children. The greater decline among second generation Chinese adolescents may also indicate that these adolescents place less emphasis on heritage language fluency for deriving their ethnic identity than second-generation Mexican children do.

If heritage language fluency is indeed an essential component of ethnic identity, then the lower heritage language fluency of second-generation Chinese adolescents should be reflected in lower ethnic identity scores among this generation compared to their first-generation counterparts. However, this was not the case. In fact, ethnic identity scores were similar between first- and second-generation Chinese. For both first- and second-generation Mexican adolescents, however, heritage language fluency may indeed be an essential component of ethnic identity. That is, comparisons among Mexican adolescents revealed that third generation immigrants had lower scores for ethnic identity *and* heritage language fluency compared to their first- and second-generation counterparts. Thus, among Mexicans, low heritage language fluency goes hand in hand with low ethnic identity scores. Among Chinese, though, a high sense of ethnic identity can be achieved with a low level of heritage language fluency. Such findings provide further evidence that a high level of heritage language fluency is not necessarily essential for the development of a strong ethnic identity, which raises some doubt as to the validity of assessing heritage language fluency in ethnic identity scales for Chinese adolescents. In other words, using heritage language fluency to assess the ethnic identity scores of second-generation Chinese adolescents may artificially deflate their ethnic identity scores.

Because first-generation Chinese are more fluent in their heritage language than subsequent generations of immigrants, they may be more likely to use fluency in Chinese as a way of distinguishing “how Chinese” they really are. On the other hand, because second-generation Chinese face difficult challenges in acquiring fluency in their heritage language, they do not achieve the level of fluency needed to regard it as an essential element of their ethnic identity. These U.S.-born adolescents living in the Los Angeles community may also perceive little

value in attaining fluency in the Chinese language; thus, the meaning of being Chinese is not tied to fluency in their heritage language (Chiang, 2001). In the case of second-generation Chinese, then, the lack of a significant relationship between heritage language fluency and ethnic identity challenges the assumption that heritage language fluency is an essential component of ethnic identity.

Because first-generation Mexicans, relative to first-generation Chinese, are more able to maintain fluency in their heritage language, there was little variance in their fluency scores. This lack of variance may explain why associations between heritage language fluency and ethnic identity were not found for first-generation Mexican youth. The U.S.-born, second-generation Mexican adolescents, on the other hand, see fluency in the heritage language as an important element of their ethnic identity. The prominence of the Spanish language in the Los Angeles area provides second-generation Mexican immigrants with opportunities to attain Spanish fluency, and this fluency becomes a distinguishing factor for defining their ethnic attachment. As expected, heritage language fluency in general did not relate to the ethnic identity of third-generation Mexicans. However, magnitudes of the relationship between heritage language fluency and ethnic identity were similar between the generations. Due to the higher status accorded to the Spanish language relative to the Chinese language in Los Angeles, generational shifts in the importance of language to a sense of ethnic identity is not as dramatic as those seen among different generations of Chinese immigrant adolescents.

An additional strength of the study was the more rigorous testing of the ethnic identity measure for item equivalence across the ethnic and generational groups. For both ethnic groups, common factor analyses of Phinney's ethnic identity scale revealed an almost identical, two-factor solution (affirmation/belonging and exploration). However, through tests of measurement invariance across *generational* groups of Chinese and Mexicans, differences in the magnitude of the factor loadings were found. In order to ensure that this measure is culturally appropriate for the ethnic-generational groups in this study, several items were dropped because they loaded differently across ethnic-generational groups. For instance, the item "spending time to learn about the culture and history of one's ethnic group" loaded much more strongly on the exploration factor in first-generation than in second-generation Chinese adolescents. Because of the time they have spent living in their country of origin, first-generation Chinese adolescents are likely to have had more opportunities to learn about Chinese culture and history than have their second-generation counterparts; for this reason, they may consider such activities more important for developing a strong sense of ethnic identity.

This study ultimately found that ethnic identity and heritage language fluency are especially important for understanding the school effort of second-generation Mexican adolescents. In other words, it may not be ethnic pride or feelings about their ethnic group that are important for engagement in school, but rather how much they engage in or seek out ethnic activities. This finding conflicts with that of Supple and colleagues (2006), who found that ethnic affirmation was significant, while exploration was not significant for explaining school grades among second-generation Latino adolescents. The present investigation considered both heritage language fluency and generational status of Latinos, a departure from the study by Supple and colleagues. Thus, among U.S.-born Mexicans, the extra effort it takes to acquire their heritage language fluency and explore their identity may help to clarify their sense of self, which in turn may enhance or increase their motivation in school (Fuligni et al., 2005). In contrast to findings for African Americans, for U.S.-born Mexican youth from immigrant families, ethnic activities are more reflective of their effort in school than is their ethnic pride or affirmation. Participation in ethnic activities among these youth may reflect their motivation to achieve educational and social mobility rather than a desire to counter negative stereotypes. For all three generations of Mexican youth, it appears that being fluent in Spanish in terms of reading/writing goes hand-in-hand with exerting extra effort in school. Although these findings

are only correlational, nonetheless, they indicate that the Mexican American youth who are more likely to apply themselves in school are also those who are particularly fluent in reading/writing Spanish. In fact, by the third generation, speaking and understanding Spanish (as opposed to reading/writing Spanish) is related to less effort in school, perhaps for those youth that are from truly disadvantaged families.

There was a surprising finding that, net of each other, neither ethnic identity nor heritage language fluency was related to the school effort of Chinese. In additional analyses that examined the gross or individual effects of each factor (without the other included), neither factor was related to the school effort of first- or second-generation Chinese. It may be that for Chinese adolescents, there are other important factors related to immigration not tested in the current study, such as parental values about the utility of education, that have effects on their effort in school.

In summary, it appears that ethnic group membership and generational status provide differential opportunities for youth from immigrant families in learning the heritage language, and in how these language experiences are reflected in their ethnic identities. These differences are also reflected in the way that heritage language fluency and ethnic identity are related to adolescents' school effort. Although for all three generations of Mexican American youth, fluency in Spanish (for reading and writing only) was positively related to their school effort, ethnic identity was also important for the school effort of second-generation youth. Thus, like African Americans, U.S.-born Mexican youth with immigrant parents derive some benefit from exploring their ethnic identity, perhaps because such exploration reflects an awareness of race relations and their status as ethnic minorities in the U.S. Rarely have studies looked at ethnic-generational differences in the language fluency and ethnic identity experiences of adolescents, and how these factors are related to adolescents' school effort.

Limitations

In examining the differential patterns of language fluency and its role in ethnic identity formation across several generations of Chinese and Mexican adolescents, several limitations to this study emerged. The current study was conducted with a sample of adolescents living in a diverse and urban context, and may not be applicable to those adolescents living in places where Spanish is not readily accessible. As such, the current findings may not generalize to adolescents who do not live in an ethnically diverse area like Los Angeles, or for those who live in rural communities. In future studies, it would be important to test whether these findings for the Mexican American youth in southern California would also apply to other regions of the country with both lower (e.g., Montana, North Dakota) and higher concentrations (e.g., Texas) of Mexican immigrants. Also, the lack of measurement equivalence of the ethnic identity scale – specifically, the exploration subscale between first-generation Chinese and second-generation Chinese and Mexicans – points to the possibility that exploration may mean something very different for first-generation youth than it does to those in the second generation. Interestingly, the two items that did not work as well for the second-generation groups relative to the first-generation Chinese had to do with cultural practices and knowledge rather than with an understanding or knowledge of their ethnic group relative to the larger society. Specifically, ethnic identity exploration may be defined much more by cultural features (devoting oneself to learning about and practicing the heritage culture) in first-generation Chinese than it is among second-generation Chinese and Mexicans. By dropping the item, an important feature of “exploration” for first-generation Chinese may be lost.

Additionally, it is desirable to have a *direct* measure of adolescents' exposure to their heritage language within their communities and of the ways adolescents perceive the role of language in shaping their ethnic identities. Adolescents' perceptions of the role of language may mediate

the relationship between heritage language fluency and ethnic identity. Also, having only a few items to assess language fluency and school effort is another limitation.

Although studies typically do not attend to generational distinctions, particularly for different ethnic groups (Portes & Schauffler, 1994; Spencer et al., 2000), the current investigation demonstrates important generational differences between Chinese and Mexican immigrants in their language fluency and its role in shaping their ethnic identities. Because heritage language fluency is not a necessary component of ethnic identity in some generations of immigrants, it may not be appropriate to use measures which assess heritage language fluency as a part of the general dimension of ethnic identity. The current investigation provides support for the idea that definitions for or meanings of ethnic identity are socially constructed. One's socio-cultural context may have different consequences for heritage language fluency, which, in turn, can have important consequences for the ways membership in a cultural group is defined.

Acknowledgements

This research was supported in part by a grant awarded to the second author from the International Migration Program of the Social Science Research Council with funds provided by the Andrew W. Mellon Foundation. The first author was supported by a NICHD grant (R24HD042849) awarded to the Population Research Center at The University of Texas at Austin, an Office of the Vice President for Research Grant, and a Summer Research Assignment from the University of Texas at Austin. We gratefully acknowledge the students for their participation, and the teachers and administrators for their assistance with the project. The authors would like to thank Tom Hanson for his statistical advice and editorial suggestions. We also thank Xiaojia Ge, Irene J. Kim Park, and Edwina T. Hansbrough for valuable comments on an earlier version of this paper, and Daniel Ozer for his statistical consultation.

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Table 1
Estimates for the Ethnic Identity Measure (Phinney, 1992)

Factors and Item	Ethnic Groups	
	Chinese	Mexican
<i>Affirmation/Belonging ($\psi 1$)</i>		
$\lambda 1, 1$ Clear sense of ethnic background	0.90 (.026)	0.74 (.034)
$\lambda 2, 1$ Happy to be a member of ethnic group	0.87 (.026)	0.73 (.046)
$\lambda 3, 1$ Strong sense of belonging to ethnic group	0.95 (.021)	0.77 (.029)
$\lambda 4, 1$ Understand what ethnic membership means	0.85 (.026)	0.77 (.028)
$\lambda 5, 1$ Pride in ethnic group	0.94 (.024)	0.73 (.043)
$\lambda 6, 1$ Strong attachment toward ethnic group	0.86 (.029)	0.78 (.030)
$\lambda 7, 1$ Feel good about ethnic background	0.91 (.019)	0.83 (.029)
<i>Exploration ($\psi 2$)</i>		
$\lambda 8, 2$ Spend time finding out about ethnic group	0.87 (.033)	0.71 (.045)
$\lambda 9, 2$ Active in ethnic groups	0.66 (.053)	0.44 (.049)
$\lambda 10, 2$ Think about life and ethnic group	0.70 (.035)	0.50 (.047)
$\lambda 11, 2$ Spend time learning culture and history	0.53 (.059)	0.37 (.058)
$\lambda 12, 2$ Talked to people about ethnic group	0.84 (.029)	0.72 (.041)
$\lambda 13, 2$ Participate in cultural practices	0.71 (.034)	0.64 (.039)
<i>Fit Indexes</i>		
χ^2	144.46	139.40
p	0.00	0.00
df	64	64
Tucker Lewis Index (TLI)	0.96	0.91
Comparative Fit Index (CFI)	0.97	0.92
Root Mean Square Error of Approximation	0.08	0.06
N	196	326

Note. All factor loadings are significant at the $p < .05$ level; Standard errors in parentheses

Table 2
Marginal Means and Standard Errors for Ethnic Identity and Language Fluency

	Chinese				Mexican				F(4, 535)		Ethnicity- Generation	Significant Contrasts			
	1st Gen.		2nd Gen.		1st Gen.		2nd Gen.		3rd Gen.						
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE					
<i>Ethnic Identity</i>															
Affirmation/Belonging	3.28	0.06	3.18	0.06	3.32	0.07	3.32	0.04	2.90	0.08	6.45	**	m1, m2 > m3		
Exploration	2.67	0.07	2.67	0.06	2.63	0.08	2.63	0.05	2.26	0.09	4.49	**	m2 > m3		
<i>Heritage Language</i>															
Speak & Understand	4.10	0.12	3.24	0.11	4.35	0.14	3.92	0.08	1.43	0.16	67.35	**	c1 > c2; m1, m2 > m3		
Read & Write	3.19	0.14	1.78	0.12	3.75	0.15	3.36	0.09	1.32	0.17	57.45	**	c1 > c2; m1, m2 > m3		
<i>English Language</i>															
Speak & Understand	4.09	0.07	4.68	0.06	4.43	0.08	4.67	0.04	4.75	0.09	16.48	**	c2 > c1		
Read & Write	3.85	0.08	4.53	0.08	4.20	0.09	4.47	0.05	4.73	0.10	16.01	**	c2 > c1; m3 > m1		
N = 97				N = 105				N = 69				N = 219		N = 55	

Note.

All contrasts are significant at $p < .01$; Gen = Generation; SE = Standard Error; c1=First-Generation Chinese; c2=Second-Generation Chinese; m1=First-Generation Mexicans, m2=Second-Generation Mexicans, m3=Third-Generation Mexicans; All marginal means control for the adolescents' age, gender, parental education, presence of a single parent in the household, and school context.

**
 $p < .01$

Table 3
Correlations among Factors of the Ethnic Identity Measure and Language Fluency

	Chinese						Mexican					
	1st Gen.			2nd Gen.			1st Gen.			2nd Gen.		
	Bi-variate	Partial		Bi-variate	Partial		Bi-variate	Partial		Bi-variate	Partial	
<i>Affirmation/Belonging</i>												
H. Speak & understand	0.46**	0.44** _a	-0.01 ^a	-0.03			0.17	0.13		0.23	0.24**	0.16
H. Read & Write	0.26**	0.30** _b	-0.13 ^b	-0.21*	*		0.11	0.12		0.23	0.25**	0.19
<i>Exploration</i>												
H. Speak & understand	0.35**	0.33**	0.10	0.09			0.10	0.06		0.31	0.32**	-0.02
H. Read & Write	0.30**	0.35**	0.01	-0.03			0.09	0.02		0.30	0.32**	0.06
	<i>N</i> = 98	<i>N</i> = 97	<i>N</i> = 105	<i>N</i> = 108			<i>N</i> = 70	<i>N</i> = 69		<i>N</i> = 222	<i>N</i> = 219	<i>N</i> = 55

Note.

H = Heritage Language; Partial correlations control for the adolescents' age, gender, parental education, presence of a single parent in the household, and school context. The same letter superscripts represent significant differences in the partial correlations for the two groups under comparison at the $p < .01$ level.

$p < .01$

$p < .05$

Table 4
Multiple Regression Analyses for Heritage Language Fluency and Ethnic Identity as Predictors of School Effort

	Chinese						Mexican					
	1st Gen.			2nd Gen			1st Gen.			2nd Gen.		
	β	SE		β	SE		β	SE		β	SE	
Affirmation/Belonging	0.10	0.18		0.03	0.14		0.21	0.25		-0.05	0.10	
Exploration	0.04	0.15		0.09	0.13		-0.12	0.19		0.20	0.10	
H. Speak and Understand	-0.16	0.11		-0.04	0.07		-0.20	0.13		-0.08	0.07	***a
H. Read and Write	0.08	0.07		-0.08	0.08		0.23	0.12	*	0.16	0.07	***
R ²	0.04			0.17			0.22			0.13		0.28
F	F(9, 87) = .37			F(9, 95) = 2.10*			F(9, 59) = 1.86			F(9, 209) = 3.47***		

Note.
 β = Unstandardized Regression Coefficient, SE = Standard Error, H = Heritage; All models control for adolescents' age, gender, parental education, presence of a single parent in the household, and school context. The same letter superscripts represent significant differences in the unstandardized regression coefficient for the two groups under comparison at the $p < .01$ level.

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