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Household context, generational status, and English proficiency among the children of African immigrants in the US

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Abstract

This study examines how household and parental-level determinants affect English proficiency among the children of African immigrants in the US. Within immigrant families, the study finds that children's level of proficiency has a stronger positive association with the proficiency of their mothers than with that of their fathers. Children's level of English proficiency significantly increases as the number other English-proficient children within their household increases. These impacts are stronger on the proficiency levels of first compared to second generation children. Levels of proficiency are, however, lowest among children in families from Portuguese speaking countries followed by their counterparts in families from countries where indigenous languages and Arabic are dominant. Although proficiency levels generally improve with increasing generational status, these improvements are smallest for children in families from Portuguese speaking countries. Except for children in families from English speaking countries, the largest improvements to proficiency with increasing generational status was observed among children in families from indigenous language backgrounds.

Introduction

Previous studies on immigrants' acquisition of English proficiency have been crucial to our understanding of language assimilation processes. We now know, for example, that although levels of English proficiency among immigrant groups are lower on their arrival in the US, proficiency levels generally increase with increasing exposure to the US society (Espenshade and Fu 1997, Espinosa and Massey 1997, Carliner 2000, Alba et al 2002). In general, however, research on the dynamics of language assimilation among immigrants mainly focuses on the outcomes of children. Interest in their linguistic outcomes is broadly driven by concerns associated with the effects of bilingualism on their adjustment processes (e.g. in Oller and Eilers 2002, Portes and Hao 2002), the impacts of generational status on the acquisition of English Language proficiency or the preservation of mother tongues (Portes and Hao 1998, Luo and Wiseman 2000, Rumbaut, Massey, and Bean 2006), and other issues that are critical to the understanding of their social adjustment processes. On the whole, the specific dynamics of language assimilation processes have been found to be heterogeneous across immigrant sub-populations. Espenshade and Hu (1997), for example,

show that immigrants from Asia have lower levels of English language proficiency compared to immigrants from Arabic, and English-speaking countries.

In the context of developing new directions for research on immigrant language assimilation patterns, the heuristic foundations established in previous studies are important for two reasons. First, as the US immigrant population becomes even more diverse, there is a growing need to examine whether the dynamics and determinants of linguistic assimilation among immigrants from non-traditional countries of origin are similar to the dynamics observed in previous studies. These studies, for example, say very little about the linguistic experiences of immigrants from African countries, India, China, and other origin countries of many recent immigrant populations. Secondly, since many recent immigrants come from societies with more complex and diverse linguistic systems, there is an even greater need to delineate the specific ways in which differences in linguistic backgrounds can affect the dynamics of linguistic assimilation among recent immigrant populations.

Recent increases in the African immigrant population in the United States have, therefore, created new opportunities for expanding research on the linguistic outcomes of the children of immigrants. The rapid growth in the African immigrant population of the US is now very well documented in several studies (e.g. Gordon 1998, Logan and Deane 2003, Logan 2007, Hatton and Williamson 2003, Kent 2007). Recent estimates, for example, indicate that the African immigrant population in the US increased by more than three-fold in the last two decades of the previous century (Kent 2007). However, despite the expansion of research on the outcomes of the children of immigrants during this same period, little is known about the language assimilation experiences of children born to African immigrants.

Equally important is the fact that the majority of previous studies on the language assimilation of immigrants make use of data from the US census and other surveys. Indeed, much of what we know about patterns of language use among immigrants is based on census information on languages spoken at home. Although census questions on linguistic ability are associated with language use within the household context, few studies have extensively examined the extent to which household-level factors mediate processes through which the children of immigrants acquire English proficiency. There is substantial evidence, for example, that conversational patterns vary within families and that these patterns can vary considerably among family members living in the same household (Barton and Tomasello 1991, Kalmijn 1999). Even though intra-family conversational dynamics are thus likely to affect English language use among specific household members the contextual nature of census data has not been fully exploited to capture, for example, the association between the English proficiency of the children of immigrants and the respective levels of proficiency of specific members of their households.

In this study, an attempt is made at contributing to the understanding of language assimilation processes by examining how household contexts and generational status affect the acquisition of English proficiency among the children of African immigrants. Using census data on children between the ages of 6 and 17 the study generally attempts to achieve three specific objectives. First, it examines the extent to which disparities in the likelihood of English language acquisition is determined by previous exposure to English, other

languages such as Arabic and Portuguese, or exposure to official languages that are indigenous to African societies. Second, the study highlights the importance of household contexts in understanding language assimilation processes and the impacts of such contexts in mediating the effects of differences in linguistic background on the acquisition of language proficiency. In short, the study will examine the extent to which factors associated with the language ability of specific household members (e.g. household heads, spouses, and other children), parental characteristics, and other household-level indicators are associated with disparities in the language ability of children with African immigrant parents. Thirdly, the study will identify the specific dynamics of language assimilation among the children of Africans from various linguistic backgrounds. In other words, it will examine whether disparities in the pace at which improvements to English language proficiency occurs with increasing generational status are conditional on differences in language backgrounds associated with African countries of origin. Ultimately, the study hope to test the hypothesis that initial disparities in English proficiency conditional on differences in linguistic background will move towards convergence with increasing assimilation into the US society.

Background

Recent analysis of US census and official immigration data indicate that there was a considerable increase in the immigration of African-born populations to the US during the decade of the 1990s (Lobo 2001, Lobo 2006, Logan 2007, Kent 2007). Logan and Deane (2003), for example, maintain that the number of Black Africans in the US with recent roots to sub-Saharan Africa increased by almost 300% in the 1990s. This increase was a clear departure from the slower scale of African immigration to the US observed in previous decades. According to Konadu-Agyemang and Takyi (2006), although about 200,000 Africans arrived in the US in the ten-year period between 1982 and 1992, approximately the same number of Africans arrived in the US in the three-year period between 1995 and 1998 alone. Other estimates also suggest that the pre-1980 immigration flows were even much smaller. Kent (2007), for example, suggests that in contrast to the close to 1 million Africans who arrived in the US after 1980, only about 60,000 African immigrants living in the US arrived in the country before that year. Not surprisingly, the contribution of Africans to the total foreign-born population of the US has increased in recent years. In fact, according to Hatton and Williamson (2003), the proportional contribution of African immigrants to the non-North American immigrant population of the US increased by a factor of about six in the last four decades of the twentieth century.

The increasing trend in African immigration to the United States has significant implications for research on language assimilation processes. In large part, the importance of African immigrant populations in this regard stems from the fact that, compared to most other immigrants, Africans generally come from societies that are linguistically more diverse (Nettle, 1999). In terms of official languages, for example, Africa can be divided into several linguistic regions consisting of Arabic speaking countries in North Africa, French or English speaking countries in West, East, and Southern Africa, and a host of countries in which other official languages are spoken. Among the latter are countries such as Ethiopia, Eritrea, and Somalia that have official and/or predominant languages that are uniquely

indigenous to their own societies. Apart from the disparities in dominant and official languages, however, there is an even greater variation in the number of non-official indigenous languages spoken within African countries. Notwithstanding the debates about the precise number of languages spoken in Africa, there are some studies (e.g. Ntiri 1993) that argue that there are about 2,000 languages spoken in varying degrees within the African continent.

Besides the fact that the diverse linguistic backgrounds of Africans creates new opportunities for testing the robustness of previous findings on language assimilation processes, the language assimilation of this recent immigrant group is likely to affect the stability of their families, and among other things, their structural integration into the US. English language ability, for instance, has been consistently linked with more positive schooling outcomes among the children of immigrants (Driscoll 1999). Similarly, previous research suggesting that bilingual ability has a positive effect on schooling outcomes (Rumberger and Larson 1998, Feliciano 2002), also has significant implications for such linguistically diverse immigrant groups.

Despite the need to expand research on the mediating impacts of household contexts on children's English language proficiency, the general importance of such contexts in the understanding of immigrants' language assimilation processes is now well recognized (Cenoz, 2003, Akresh 2007, Fishman 2000, Stevens 1992). In terms of language use within families, Tseng and Fuligini (2000) intuitively argue that patterns of language use among parents and their children vary within the household context. In parent-child conversations, for example, children can choose to respond to their parents in either the same language or in a different one. Previous studies also suggest that children who respond to their parents in a different language are less likely to have a strong emotional attachment to them (e.g. Tseng and Fuligini 2000, Tannenbaum and Howie 2002). In general, however, immigrant parents' desire to use the language of their host countries within households is strongly influenced by the cultural role played by origin country languages within immigrant communities. Pendakur and Pendakur (2002), for example, maintain that language use among immigrants can serve multiple purposes and affect the extent to which immigrants can identify themselves as members of a cultural community. Despite the cultural importance given to the use of native-languages by immigrant parents, some children of immigrants do show clear preferences for the use of English language especially as their duration of residence in the US increases (Portes and Schauflyer 1994, Rumbaut 1997).

Attention given to families in the study of the children of immigrants' language assimilation processes is also motivated by concerns about whether the use of mother-tongue languages within families hinders or facilitates the acquisition of English proficiency. However, empirical studies investigating these impacts have produced mixed results. Several studies, for example, show that having someone who speaks a mother-tongue living within a household negatively affects the likelihood that children will be monolingual English speakers (Alba et al 2002, Ishizawa 2004). At the same time, Tran (2007) argues that children's use of Spanish at home has no effect on the acquisition of English language proficiency. In addition, he suggests that processes associated with the retention of ethnic languages are distinct from those that facilitate English Language acquisition. Given the

importance of language dynamics for the integration of immigrants in their host societies, these contrasting findings need to be reconciled. In this study, an attempt is made at further clarifying these effects by examining the possible ways in which language use within household contexts affect English language proficiency among a relatively new immigrant population in the US.

Conceptual issues

Much of what we know about the association between immigrant assimilation and the acquisition of English language proficiency remains unchallenged by the findings reported in recent studies. With a considerable degree of consistency, immigrants have been shown to have increasing levels of proficiency and a preference for the use of English, as generational status increases (Espenshad and Fu 1998, Espinosa and Massey 1998, Portes and Hao 1998, Portes and Schauffler 1994). While most studies focus on the extent to which immigrant language patterns fit into this conventional model of language assimilation, fewer studies have described the specific determinants of this association in a testable conceptual framework. In this investigation, conceptual insights are drawn from one such destination-language acquisition framework developed by Chiswick and Miller (2001). This framework describes the general determinants of destination-language acquisition among adult immigrants. Nevertheless, two factors described by the Chiswick-Miller framework, *exposure* and *efficiency*, are of particular relevance to the understanding of the language acquisition processes among the children of immigrants¹.

Factors associated with exposure are generally related to attributes immigrants acquire both before and after the immigration process. In terms of pre-migration exposure, for example, immigrants from countries with a dominant and/or official language other than English (e.g. Arabic or French speaking countries) are presumed to have less pre-immigration exposure to English compared to their counterparts from countries in which the English Language is dominant (Espenshad and Fu 1997). For post-immigration exposure, however, there is a larger variation in the attributes of immigrants considered to be its main determinants. One of these is school enrollment (Chiswick and Miller 2001) which is important because children enrolled in schools within their host societies have greater levels of exposure to destination country languages.

Immigrant families are among the more important contextual determinants of post-immigration exposure. The nativity characteristics of the parents of immigrant children are especially important in this regard (Stevens 1992), since children are more likely to have a greater exposure to English if their immigrant parent is married to a spouse from the host country population but have less exposure if both parents are immigrants. Accordingly, Alba et al (2002) report that children with parents in exogamous marriages are more likely to be monolingual English speakers compared to their counterparts with parents in endogamous marriages. Children's exposure to English within the household context may also be affected by their parents' desire to retain origin country languages in order to emphasize their

¹The Chiswick-Miller framework also considers the impact of economic incentives on language acquisition processes (see e.g. Chiswick-Miller, 2007). However, because the study focuses on children between ages 6 and 17, the economic incentives are not addressed in these analyses.

cultural origins (Pendakur and Pendakur, 2002), a fact consistent with reports of a negative association between children's English language ability and having a bilingual household member in other studies (Alba et al 2002).

With few exceptions (e.g. Ishizawa 2004) research on the language assimilation of the children of immigrants give limited attention to the impacts of intra-family influences. In other words, while there is considerable interest in the independent effects of languages spoken at home, less attention has been given to identifying possible conversational dyads or triads that are important to children's proficiency acquisition processes. This limited attention tacitly ignores the fact that previous studies have found that children's conversations within households vary in frequency and length depending on whom they are talking to. Among children in the early childhood ages, for example, studies have shown that children's triadic conversations are much longer than their dyadic conversations (Barton and Tomasello 1991). Similarly, within families, there is evidence that mothers are more likely to talk to or initiate conversations with their children compared to fathers (Kalmijn 1999, Noller and Callan 1990). These differences in parent-child conversation patterns, suggest that there is a stronger positive association between the language ability of children and their mothers compared to the respective association between their English speaking ability and that of their fathers. Other studies (e.g. Carliner 2000) confirm that female immigrants have higher English language proficiency compared to males. This female English language advantage is a likely reflection of a greater willingness among females, relative to males, to learn new languages (Hamers and Blanc, 2000).

Children born to immigrant parents also have varying levels of *efficiency* that affect their ability to acquire proficiency in destination country languages. Chiswick and Miller (2001) refer to language efficiency as the extent to which immigrants are able to improve their proficiency in destination-country languages per unit of exposure. The three major determinants of efficiency are age at migration, educational attainment, and linguistic distance. Holding other factors constant, increases in both age at migration and linguistic distance have a negative effect on efficiency in contrast to the positive effect on efficiency of educational attainment. In terms of age at migration, it is now well established that there is indeed a negative association between age at immigration and immigrants' level of language proficiency (e.g. Espenshade and Hu 1997, Stevens 1999). In the same vein, immigrant assimilation, measured by increasing generational status, has an important bearing on the post-immigration exposure of the children of immigrants and thus, their English proficiency. In terms of the importance of educational attainment, other studies have confirmed that immigrants with higher levels of education have higher levels of language proficiency than their counterparts with low levels of schooling (Carliner 2000).

Given the diverse linguistic backgrounds of African immigrants, the language assimilation of their children is also likely to be determined by the length of the linguistic distance between the dominant/official languages of their countries of origin and English. Linguistic distance, or the extent to which languages differ from each other, is generally smaller between English and European languages such as Portuguese and French, compared to the corresponding distance between the English and non-European languages (Chiswick and Miller 2004). Arabic, for example, has a greater linguistic distance with English (Saiegh-

Haddad 2003), although its linguistic distance with Hebrew is comparatively smaller (Beenstock, Chiswick, and Repetto 2003). Not surprisingly, empirical studies demonstrate that children who are native speakers of Arabic experience significant difficulties in acquiring English Language proficiency (Saiegh-Haddad 2003). No systematic study has been done to estimate the size of the linguistic distance between indigenous African languages and English. However, since previous studies suggest that non-European languages have a greater linguistic distance with English than European Languages, it is reasonable to assume that indigenous African languages have a greater linguistic distance from English compared to languages such as French, Spanish, and Portuguese. Based on the greater linguistic distance between Arabic and English and a possibly large distance between indigenous African languages and the latter, the first generation children of African immigrants from countries in which Arabic or indigenous languages dominate are generally expected to have lower levels of English Language proficiency compared to their counterparts from English-dominant African countries. At the same time, based on the relatively larger linguistic distance of immigrant from such backgrounds, both first and second generation children with parents from Arabic and indigenous language speaking countries are also expected to have lower levels of English language proficiency relative to their counterparts born to parents from English dominant countries.

In summary, the conceptual foundations developed in previous studies point to five key hypotheses that are examined in this study. First, the English speaking ability of the children of immigrants is expected to have a stronger positive association with maternal than paternal levels of English proficiency. Second, since child in families from English speaking countries are hypothetically more likely to speak English at home, controlling for the proficiency levels of other household members will decrease the relative disparity between them and their counterparts in families from non-English speaking countries. Third, children in immigrant families from countries with a European official language (e.g. Portuguese) are expected to have higher levels of English proficiency compared to their counterparts in families from countries with non-European official languages. Fourth, because of the smaller linguistic distance between European languages and English, children in immigrant families from countries with a European official language are also expected to experience the largest gains to English proficiency as generational status increases. Finally, for all children born to immigrants, proficiency levels are expected to improve with increasing generational status and for first generation children proficiency is expected to have a negative association with age at migration.

Data and Research Methods

There is lack of information on African immigrants in the US in most datasets used to study the outcomes of the children of immigrants. Since the US census is the best known available source of information on African immigrants in the US this study's main data source is a 5 % sample of 2000 census available in the Integrated Public Use Microdata Samples (IPUMS) database of the Minnesota Population Center. The practical utility of these data lie in the fact that they contain information on basic demographic indicators (e.g. age and sex), economic characteristics (e.g. individual and household incomes, poverty status), social characteristics (relationships with household heads), migration-related attributes (e.g. data

on place of birth, duration of residence), and indicators of the English language proficiency of respondents.

In the empirical analysis, the study focuses only on the outcomes of first and second generation children. Children born to African immigrants are identified as the biological children living in households in which either the household head or spouse of the household head is an immigrant from Africa. To ascertain the national origins of these parents, information on place of birth is used to identify African immigrant parents as parents born in an African country. For all children born to immigrants, information on their countries of birth is used to distinguish between first generation (or foreign-born) children and their second generation or (US-born) counterparts². In order to estimate the age of migration of first generation children of immigrants, data on age and duration of residence are used to generate an estimate of age at immigration based on age minus duration of residence. Following Rumbaut (2004), the study then interacts information on age at migration with that of first generation status to distinguish between various categories of first generation children. Accordingly, 1.75 generation immigrant children are defined as first generation children who arrived in the US between ages 0 and 5; the 1.5 generation as first generation children who arrived in the US between ages 6 and 12; and children in the 1.25 generation as children who arrived in the US between ages 13 and 17.

Parental information on country of birth is then used to distinguish between immigrant families from five major language regions within the African continent. These language regions are English, Arabic, Portuguese, Indigenous, and 'Other' regions, and are based on the official languages spoken in each African country identified in the US census. Language region is also used to determine pre-migration exposure to English and as a proxy indicator of linguistic distance since the main sources of empirical estimates of linguistic distance do not contain estimates for indigenous African languages³ (Chiswick and Miller 2002, 2004).

The US census data makes it possible to identify only one of the three Portuguese speaking countries found in Africa – Cape Verde. Similarly, although there are large French speaking populations in Africa, children with parents from these countries were extremely underrepresented in the 5 % census sample (i.e. they account for less than 0.01% of all children born to Africans). Consequently, children born to parents from French speaking countries are included in the category of immigrants from 'Other' language backgrounds. The latter also includes children born to immigrants from African countries listed in the 5% census sample as "Africa, Not Stated"⁴. The generally limited representation of children with parents from French and Portuguese speaking African countries is consistent with

²Although studies on the linguistic outcomes of second generation children generally focus on bilingualism, these children are included in the examination of English speaking ability. As the study will demonstrate, there is considerable variation in the English language proficiency even among second generation children (e.g. Tables 4 and 5) that is conditional on factors such as parental language background.

³*Linguistic scores* ranking degrees of difficulty in learning English range from 1.0 - most difficult, to 3.0 - least difficult (Grimes and Grimes 1993). The respective scores for Arabic and Portuguese speakers are 1.5 and 2.5 respectively. *Linguistic distance* is estimated as the inverse of these scores (Chiswick and Miller 2004). Immigrants from English speaking regions are assumed to have either a linguistic distance of 0 or the smallest linguistic distance.

⁴Children with parents from Cameroon are also included in the "Other" category for two reasons. First they are also extremely under-represented in the sample. Second, because Cameroon has both English and French as its official languages children born to Cameroonians were not included among children in families from English speaking African countries

empirical evidence showing that African nationals from non-English speaking countries prefer to migrate to European countries (e.g. France) where their official languages is more likely to be widely spoken (Massey et al 1998, Castles and Miller 2003).

The US census data also makes it possible to identify three African countries - Ethiopia, Eritrea, and Somalia - in which indigenous African languages are either the official or predominant languages spoken. In Ethiopia, for example, the officially recognized national language is Amharic while in the case of Somalia, Somali was declared the national language in the 1970s and is also currently the most widely spoken language (Warsame 2004). Eritrea, on the other hand, currently has no official language. However, although Tigrinya, Amharic, and Arabic are the country's three major languages, Tigrinya is the most commonly used of the three and its use is actively promoted (Selassie 1998, Bloor and Tamrat 1996). More important, however, is the fact that unlike almost all African countries, and all African countries of origin identifiable in the US census data, Eritrea, Ethiopia, and Somalia use their predominant indigenous languages as mediums of instruction in the pre-college levels of schooling (Bangbose, 2004).

English language proficiency in the US census data is based on a measure of the English language ability associated with responses to questions on languages spoken at home. These responses can be used to generate an ordinal measure of self-rated level of English language proficiency since answers to the question on how well a person speaks English, can be selected from a range of possible responses that include – not at all, not well, well, very well, and speaks only English. Following an approach similar to those used in previous studies (e.g. Caliner 2000), information on English language proficiency is used to generate an ordinal measure that ranks English language proficiency in the following way: 0= not at all, 1= not well, 2 = well, 3 = very well, and 4 = only English. This ranked variable is then used as the dependent variable in the study's regression analysis.

Unlike most studies on immigrants' language proficiency, however, this study attempts to account for the likely biases associated with the clustering of children of immigrants within families. In other words, because children are nested within families, coefficient estimates of their levels of English language proficiency are likely to be biased as a result of the failure to account for other unobservable household-level factors. For example, Espenshade and Hu (1997), suggest that such biases may occur if the English proficiency of each household member is judged by the same person. Thus, although these biases are captured by the error term, they will be correlated with other predictor variables. One solution to this problem involves including as many observable household-level characteristics into the regression models to reduce the potential biases of the unobserved factors. In fact, this is the strategy used by Espenshade and Fu (1997) in their study of the English language proficiency of immigrants. In this study, however, unobservable household-level factors are accounted for using random-effects models. Specifically, the study employs ordered probit regression models with random-effects in its multiple regression analysis. (i.e. based on the *reoprobit* command in STATA). Empirically, it is therefore assumed that the dependent variable, i.e. ordinal rankings of language proficiency, contain a latent continuous measure of language proficiency that can capture variations in the English speaking ability of the children of immigrants.

Findings

Descriptive Results

Summary estimates of the characteristics of the children of African immigrants are presented in Table 1. Based on the 2000 US census data, about half of the children between the ages of 6 and 17 who have African immigrant parents have parents from English speaking African countries. At the same time, a considerable proportion of children in African immigrant families (21 %) were born to parents from the Arabic speaking countries in North Africa. In general, however, children in families from all five language backgrounds have similar demographic characteristics, i.e. age and sex, and also have relatively little variation in their schooling enrollment distributions. Despite these similarities, the children of African immigrants have distinct generational status distributions, and other more important variations in their household and parental characteristics, that are conditional on differences in language background.

Children with parents from indigenous language backgrounds, for example, are about twice as likely to be first generation immigrants compared to other children. The relative recency of their immigration patterns reflects the fact that African immigrants from Ethiopia, Eritrea, and Somalia, arrived in the US in significantly larger numbers during the last two decades as part of a variety of resettlement programs that brought refugees from these countries to the US (Arthur 2000, Singer and Wilson 2006). Children with African immigrant parents also differed in their levels of English monolingualism. Not surprisingly, the relative prevalence of English monolingualism is also lowest among immigrant families with less pre-immigration exposure to English. In other words, while more than two-thirds of African children from English speaking backgrounds are English monolinguals, the prevalence of English monolingualism was less than 50% among children from Portuguese, Indigenous, and Arabic language backgrounds.

With regard to post-immigration exposure to the English Language, the universal patterns of school enrollment shown in Table 1 provide preliminary evidence that differences in post-immigration exposure to English at the schooling level are negligible. Consequently, any difference in the post-immigration exposure to English among children must come from outside the schooling context. In the household context, for example, having two immigrant parents is conceptually associated with lower levels of exposure to English compared to having at least one non-immigrant parent. In this regard, Table 1 indicates that except for children from 'other' language backgrounds, children in families from Portuguese and indigenous speaking backgrounds are more likely to have two immigrant parents than their counterparts from English speaking backgrounds. Similarly, within the household context, having bilingual immigrant parents⁵ also conceptually limits children's levels of post-immigration exposure to English. Thus, according to Table 1, children in families from non-English language backgrounds also receive less exposure to English within the household context since they are considerably more likely to have household heads and spouses who are bilingual.

⁵Bilingual parents are defined as parents who speak a foreign language and English.

A closer inspection of the results in Table 1, however, reveals that, on average, children from backgrounds associated with the lowest levels of English monolingualism were also more likely to come from families with the highest levels of parental bilingualism. Children from Portuguese speaking backgrounds, for example, had the lowest levels of English monolingualism but the highest percentage of household heads who were bilingual. Similarly, their counterparts from indigenous language backgrounds had the second lowest and highest percentages of children who spoke only English and household heads who were bilingual respectively. With regard to the bilingual ability of the spouses, children from language backgrounds associated with lower levels of English monolingualism were also more likely to be in families with bilingual spouses although bilingualism was generally less prevalent among spouses than among household heads.

Multiple regression results

Estimates of the extent to which differences in language background affect children's English proficiency are presented in Table 2. Gross differences in English proficiency associated only with differences in language background (Model 1) indicate that children born to Africans from Portuguese speaking backgrounds are the least likely to be proficient in English. At the same time, although immigrants from Arabic speaking backgrounds have been found to have considerably low levels of English proficiency in other studies (e.g. Espenshade and Hu 1997), the coefficients in Model 1 reveal that children in families from Arabic speaking backgrounds are in comparative terms more proficient English speakers than children in families with Portuguese and indigenous language backgrounds. Also important is the fact that although the English proficiency of African immigrants from indigenous language backgrounds has not received extensive attention in previous studies, Model 1 suggests that their relative level of proficiency is lower than that of all other children born to African immigrants except when compared to children in families from Portuguese speaking backgrounds.

The lower English proficiency of children from families from Portuguese speaking backgrounds relative to all other children is inconsistent with the fact that there is a smaller linguistic distance between Portuguese and English than there is, for example, between Arabic and English (Chiswick and Miller 2004). A more plausible explanation for the low proficiency of children in the sample in families with Portuguese speaking country is based on the unique geographic distribution of immigrants from Cape Verde - the only African immigrants from Portuguese speaking backgrounds found in the 5% US census data sample. As a result of the transatlantic relationship between whaling communities in Cape Verde and the New England states that dates back to the 1800s (Halter 1993), contemporary Cape Verdean immigrants arriving in the US still prefer to live in the North Eastern region. In contrast to other African immigrants, for example, about 85% of all immigrants from Cape Verde and 88% of their children in the sample live in only two states - Massachusetts and Rhode Island. As others have maintained, high levels of immigrant concentration within specific geographic communities provides opportunities for them to maintain their mother tongues and can in the long-run limit their degree of linguistic assimilation within their host societies (McManus 1990, Stevens 1992).

Accounting for differences in other child-level characteristics in Model 2 reduces the comparative disparity in English proficiency between children from Portuguese speaking backgrounds and those in the reference group by about 18%. Nevertheless, their English proficiency levels are still the lowest among all children born to African immigrant parents. As expected, Model 2 also demonstrates that school enrollment has a positive impact on English proficiency. However, contrary to our conceptual expectations of a positive association between language proficiency and educational attainment, children who have completed middle school are not more proficient than those who have not, after other factors are controlled. These findings can generally be interpreted in two ways. First, the positive impact of school enrollment, or impacts of the children of immigrants' greater exposure to English by their mere presence within the schooling context, may be more important in facilitating the acquisition of English proficiency compared to actual increases in educational attainment. Second, these findings also suggest that in contrast to the effect of educational attainment on English proficiency observed in previous studies based on adult immigrants (e.g. Carliner 2000), educational attainment does not have effect on the English proficiency among the children of immigrants in the schooling ages.

In Models 3 and 4, additional controls are included to account for differences in the demographic, linguistic, and socioeconomic characteristics of household heads and their spouses. In both models, other household background characteristics, e.g. household size and family structure, are also controlled. Including the characteristics of household heads in Model 3 has a greater effect on reducing the relative disparities of children from Portuguese and indigenous language backgrounds, the two groups associated with the lowest levels of English language proficiency, and their counterparts from other regions. More importantly, the comparative 'advantage' of children in families from English speaking countries over their counterparts from other countries is also reduced. In part, this reduction is consistent with the notion that children born to immigrants from English speaking countries may hypothetically be more likely to derive added benefits to their English speaking ability that are associated with the higher proficiency levels of their own household members. Furthermore, the addition of other household-level controls in Model 3 reverses the slight comparative advantage of children from families from Arabic speaking backgrounds relative to their counterparts from indigenous language backgrounds observed in Model 1. Based on previous studies on the characteristics of African immigrants from Arabic speaking countries, these differences are not surprising. Adult immigrants from North Africa's Arabic speaking countries tend to have very high levels of education (Healey 2006), while as noted earlier, immigrants from indigenous backgrounds in the sample are mainly from refugee affected countries. Additional analyses of the data revealed, for example, that except for families from English speaking backgrounds, families from Arabic speaking backgrounds had the highest percentage of household heads who were college graduates (61%) and that in contrast, the corresponding percentage for the household heads in families from indigenous language backgrounds was considerably low (30%).

Crucial to the understanding of language development processes among the children of immigrants is the fact that Models 3 and 4 find that there is a positive impact on children's English proficiency associated with having additional English proficient children (i.e. children who speak English very well or speak only English) living within households. In

other words, for each child i living in a household with a total of N number of children, an increase in the number of English proficient children among in $N-i$ is positively associated with higher levels of English proficiency. Seemingly, these results show that children born to African immigrants are more likely to be proficient English speakers when they are located within contexts that allow them to interact with other children who have more advanced English language skills.

Holding other household head characteristics constant, the Model 3 demonstrates that children with household heads who are proficient in English are also more likely to be more proficient. In addition, the improvements to language proficiency associated with having a proficient household head offsets the negative impacts of having two immigrant parents. Separate interaction terms for parental gender and parental language proficiency were also included in Model 3 (as well as Model 4) to test whether the sex of the proficient parent was a significant predictor of children's language proficiency after accounting for other factors. These interactions were not statistically significant and were subsequently excluded from the models. Table 2 also shows that having a female parent who is also a household head has a positive impact on children's acquisition of English proficiency after other factors are controlled. However, the specific non-linguistic pathways through which having a maternal household head positively affects children's development of English proficiency are not quite clear.

In Model 4, the positive impact of having a proficient spouse more than offsets the negative impact of having two immigrant parents⁶. Previous findings of a negative association between having parents in endogamous marriages (i.e. both parents are foreign-born) and children's language proficiency are therefore clarified, since both Models 3 and 4 indicate that the language ability of parents in endogamous unions is more important than simply having parents in such unions. In fact, when the characteristics of household heads and spouses are simultaneously controlled (Model 5), the significant negative effect of having two immigrant parents is completely eliminated, yet the positive impact of having English proficient parents remains. At the same time, when both household head and spousal characteristics are controlled the lowest levels of English proficiency are observed among children from Arabic language backgrounds. This finding reinforces the notion that the comparatively higher likelihood of proficiency among children from Arabic language backgrounds relative to their counterparts from Portuguese and indigenous backgrounds is driven in part by the parental characteristics of children with immigrant parents from North Africa's Arabic speaking countries.

In Table 3, attention is focused on disparities in English proficiency among first and second generation children. Children born to African immigrants from English speaking backgrounds (reference group) continue to maintain their comparatively higher level of English proficiency, regardless of generational status. Likewise, the apparent ordering of the proficiency levels by language background observed in Table 2 remains unchanged. Other clear differences in the determinants of English proficiency between first and second

⁶These spouses could also be very proficient US-born spouses married to immigrant household heads or very proficient immigrant spouses married to US-born household heads.

generation children are highlighted in Table 4, the most important of which is the fact that the advantage of children from English speaking backgrounds over other children in the previous models is mainly driven by the outcomes of second generation children. At the same time, increased exposure to English through school enrollment has a significantly greater impact on the language proficiency of first generation children but no effect on the proficiency of their second generation counterparts. On the whole, this finding is generally intuitive since additional exposure to English within the schooling context is logically more important for improving language proficiency if children were born outside of the United States than for those who are US-born. Similarly, Table 3 indicates that having more children who are proficient in English living in the same households seems more beneficial for improving English proficiency among first generation than second generation children. The robustness of this finding and the statistical significance of the generation differences were also confirmed (not shown) by adding an interaction term for first generation status and having other English proficient children within households in a pooled sample of first and second generation children.

Other scholars, e.g. Rumbaut (2004), have argued that for first generation children age at immigration can also be used to capture the life-stage in which migration occurred and the extent to which they are socialized in the ways of their host societies. Accordingly, children who arrived in the much younger ages, e.g. between age 0 to 5, or the 1.75 generation children, are more likely to have outcomes similar to those of second generation children since their childhood socialization processes are generally more similar to those of second generation children. At the same time, English language proficiency is itself a requirement for, and a product of, socialization processes involving destination-country populations. Therefore, the analysis expects to find a consistent positive association between English proficiency and greater US socialization measured by increasing generational status. Of greater interest, however, is the extent to which differences in language backgrounds mediate the extent to which assimilation processes lead to greater English proficiency among the children of African immigrants. These issues are assessed in Table 4 that presents estimates of English language proficiency, by generational status, for children in families from the respective language backgrounds.

For reasons of simplicity, Table 4 only presents the coefficients for language background and generational status in all models. Coefficients shown in Model 1 are based on estimates that control only for the language background and generational status alone, while in Models 2 to 3, controls are incrementally added to account for the other characteristics of children and household characteristics (i.e. household size, single parents families, etc). In Models 4 and 5, household head characteristics and spousal characteristics are respectfully added to controls included in Model 3.

As expected, language background mediates the extent to which increasing assimilation improves the English speaking ability of the children of immigrants. Among children in all language groups, gross disparities between 1.25 and second generation children observed in Model 1, decreases with the addition of various household-level and parental controls in subsequent models. These decreases are generally important because they again suggest that the impacts of assimilation processes on improving English proficiency among the children

of immigrants may be strongly affected by the mediating effects of parental and household-level characteristics.

Based on the results in Model 1, children from Portuguese speaking backgrounds experience the smallest improvements to English proficiency with increasing generational status. Seemingly, the concentration of their immigrant families in only two states not only reduces their overall levels of English proficiency, but also limits the extent to which longer exposure to the US society can improve their English speaking ability. Next to children from families with Portuguese speaking backgrounds are children in families from Arabic speaking countries. Even after controlling for child characteristics (Model 2), the latter still also experience comparatively smaller proficiency gains with increasing generational status. For the most part, children from English language backgrounds experienced the largest improvements in proficiency associated with increasing assimilation into the US. Apparently, children born to immigrants who had some pre-immigration exposure to English experience even more enhanced levels of English proficiency as they assimilate. Despite this, however, living in families with English speaking backgrounds does not by itself confer a universal advantage in English proficiency over all other children of immigrants. In other words, all first generation children from families with English speaking backgrounds do not necessarily have better English language speaking skills than all the first and second children from other language backgrounds. Second generation children from indigenous and Arabic speaking backgrounds, for example, are likely to have a higher level of proficiency than 1.25 and 1.5 children from families from English speaking countries. Thus, even for children from English speaking backgrounds a longer exposure to the US society is still needed in order to improve English language proficiency.

Furthermore, although Table 2 previously revealed that children from indigenous language backgrounds had higher comparative levels of English proficiency than their counterparts from Portuguese speaking backgrounds, Model 1 in Table 4 shows that the former have the lowest levels of English proficiency among children who arrived in the US as older adolescents (i.e. 1.25 generation children). Their lower overall levels of English proficiency relative to their counterparts from Portuguese speaking backgrounds (Model 1, Table 3) is therefore likely to reflect the fact that the former's ability to speak English improves faster with increasing assimilation compared to the proficiency of the latter.

More importantly, however, Table 4 demonstrates that most of the comparatively lower level of English proficiency among first generation children from indigenous speaking backgrounds appears to be explained by differences in household and parental-level characteristics. Including additional controls for the characteristics of household heads (Model 4) and spouses (Model 5) generally eliminates their language disadvantage relative to children with Portuguese speaking backgrounds in Model 4 and those from both Portuguese and Arabic speaking backgrounds in Model 5. In addition, reduction in proficiency disparities by generational status and language background generally appear to be greater with the inclusion of spousal-level factors (Model 5) than with the inclusion of household head characteristics (Model 4). Accordingly, when background household-level factors and spousal-level factors are controlled in Model 5, children from indigenous language backgrounds have generational patterns of English proficiency that are quite

similar to that of their counterparts in families from English speaking countries. In fact, Model 5 shows that by the second generation, there is no significant difference in English proficiency between children from English and indigenous language backgrounds.

Discussion and Conclusions

Despite considerable progress in research on the language assimilation processes, the increasing diversity of the US immigrant population provides new opportunities for us to improve our knowledge of the dynamics of these processes among the children of immigrants. Furthermore, in previous studies less extensive attention generally given to the possible ways in which intra-familial factors are likely to affect the acquisition of English proficiency among the children of immigrants. In this study, our understanding of the dynamics of linguistic assimilation among the children of immigrants has been extended in three main ways. First, data on children in African immigrant families have been used to expand our understanding of the determinants of English proficiency among new immigrant groups from linguistically diverse contexts. Second, apart from paying attention to both the traditional determinants of language assimilation, this study has given special attention to the importance of intra-familial influences on English proficiency acquisition among immigrants' children. At the same time, the study has identified the specific dynamics of language assimilation processes that are conditional on differences in language background, using comparisons between immigrants in families with predominantly European and indigenous African language backgrounds.

Within immigrant households, English language acquisition among children is associated with key household and parental-level covariates. The stronger positive correlation between mother's English proficiency and the proficiency of their children is consistent with previous studies that demonstrate that mothers are more likely than fathers to have frequent conversations with their children compared to fathers. Consequently, these results suggest that when English language is used in conversations within immigrant families, it is more likely to occur in conversations between children and their mothers than between them and their fathers. Although the direction causality between child and maternal language use cannot be determined using census data, these findings also appear to suggest that both children and their mothers experience greater mutual benefits, in terms of enhanced English proficiency, in their conversational dyads than the respective benefits derived in other conversation dyads found within the household context. At the same time, although the impact of the English proficiency of mothers is eliminated when other factors are controlled, the positive effect of having English proficient household heads and spouses still remained.

A more robust finding of this study is that the acquisition of English proficiency among the children of immigrants is strongly associated with having other English-proficient children within the household. In short, the English proficiency of other children in immigrant children's language learning contexts appears to be an important facilitator of improved English proficiency. More importantly, the robust nature of this finding, even after accounting for differences in school enrollment, suggests that there may be additional benefits to school enrollment for the children immigrants that extend beyond receiving instruction on the use of English and the use of English as the medium of instruction in

schools. Seemingly, for the children of immigrants, being around other proficient English speakers of school going age further helps to improve English proficiency since it contextualizes the use of English within their child-specific social environment. That these benefits are greater for first generation children is clearly intuitive. For those immigrants born outside of the US, contexts that increase their interaction with other proficient English speakers are even more likely to facilitate English language fluency thereby accelerating their acculturation and integration into the US society.

Disparities in English proficiency are also associated with differences in the language background of immigrant families. As expected, children in families from English speaking countries have the highest levels of English proficiency. Quite unlike most previous studies on English proficiency, however, the analysis suggests that part of the 'advantage' of these children is associated with the fact that other members of their households, e.g. their parents and their siblings, are more likely to have better English speaking skills. Accordingly, adding controls accounting for the proficiency levels of their household members reduces their apparent comparative advantage. Similarly, although previous studies suggest that exposure to non-European languages leads to greater difficulties in acquiring English proficiency, the reverse is observed among the children in this study. Children from families with a Portuguese language background have the lowest levels of English proficiency among children in African immigrant families. The study argues that the lower English proficiency of these children is associated with the concentration of Portuguese-speaking African immigrant populations in two US states and is likely to increase the disincentives for the use of English within their specific geographic contexts. Similarly, children born to immigrants from Portuguese backgrounds are also less likely to improve their levels of proficiency as they assimilate into the US society. Indeed, the relative disadvantage of the children born to Portuguese speaking immigrants still remains when proficiency levels are compared among the second generation children from other language backgrounds. These findings, therefore, suggest that although the concept of linguistic distance provides a useful framework of understanding English language acquisition among immigrants, the effects of linguistic distance are clearly mediated by situational factors that affect the dynamics of language assimilation processes.

No previous study on the language assimilation processes of the children of immigrants has examined the outcomes of children from African countries in which an indigenous language is dominant. However, this study indicates that levels of English proficiency among these children are high relative to their counterparts from Portuguese speaking backgrounds. Similarly, although gross differences in Model 1, Table 2, revealed that they have comparatively lower levels of proficiency relative to children from Arabic speaking backgrounds, the comparative differences are accounted for by differences in parental and household level factors. More important is the fact that the study demonstrates that exposure to indigenous African languages does not impede language assimilation processes. Rather, children from indigenous speaking backgrounds improve their proficiency in English faster than all other children born to African parents as they assimilate except when compared to the children of immigrants from English speaking countries.

Unsurprisingly, the result presented here are not without their limitations. Among the most important of these, is the fact that census data are unlikely to capture the overall linguistic diversity of African immigrants in the US. Although almost all African countries have an official language captured by the language groups used in this study, the underrepresentation of immigrants from countries with other major language groups (e.g. French) in these data constrains the study of the dynamics of their own proficiency acquisition processes. This limitation generally relates to the broader problem associated with the lack of information on children in some immigrant sub-populations in available datasets (Mendoza and Dixon 1998, Kao 2004). Yet another possible limitation is the fact that the language groups defined in this study are based on official languages used in parents' countries of origin. Within these broad groups, however, levels of proficiency are also likely to vary or be associated with proficiency levels in less prevalent African dialects. Broadly speaking, these issues do not seem to affect the main findings reported in the study. In short, consistent with conceptual expectations, children in families from English speaking countries still have higher levels English proficiency despite the possible effects of other African dialects. Of greater interest, however, is the impact of disparities in English proficiency among the children of Africans on their adjustment and acculturation processes. In the same vein, the extent to which the language characteristics of these children affect their social outcomes relative to those of other children of immigrants is not quite clear. As future studies examine the language assimilation processes of children in other immigrant sub-populations, the role of linguistic differences in mediating disparities in other outcomes will become more evident. Such studies will generally contribute to the development of an even more comprehensive picture of the children of immigrants living in the US.

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Table 1

The sample characteristics of children with African immigrant parents

	Language Background				
	Arabic	Portuguese	Indigenous	Other	English
Age (Mean)	11.2	11.4	11.2	10.9 ^{***}	11.2
Male	51.7	49.3	51.5	50.8	51.1
School Enrollment	98.6	98.3	98.2	98.5	98.5
First generation	28.1 ^{***}	29.5	52.7 ^{***}	26.6 ^{***}	32.1
Speaks only English	42.4 ^{***}	22.1 ^{***}	39.2 ^{***}	55.1 ^{***}	69.8
Both Parents are immigrants	72.1 ^{***}	86.0 [*]	90.6 ^{***}	69.8 ^{***}	80.9
Bilingual Household head	76.6 ^{***}	90.7 ^{***}	89.7 ^{***}	66.3	65.2
Bilingual Spouse	68.7 ^{***}	58.6 ^{***}	60.3 ^{***}	49.4	50.1
Family Size (Mean)	4.8	4.9	5.5 ^{***}	4.9	4.8
N	2,388	420	1,154	1,992	5,187

p<0.001

*
p<0.05

Table 2

Random-effects ordered probit estimates of the factors associated with English proficiency among the children of African immigrants

	Model 1	Model 2	Model 3	Model 4	Model 5
Language Background					
Portuguese	-3.07***	-2.53***	-1.28***	-1.23***	-0.84***
Indigenous	-1.99***	-2.06***	-0.85***	-0.77***	-0.52***
Arabic	-1.77***	-1.69***	-1.10***	-1.09***	-0.92***
Other	-1.41***	-0.94***	-0.78***	-0.82***	-0.67***
English (ref)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Age		0.03**	0.01	0.00	0.00
Males		0.05	0.06	0.10*	0.09*
Enrolled in School		0.59**	0.49**	0.46*	0.42*
Completed middle school		-0.19**	-0.18**	-0.17*	-0.17*
First generation		-1.67***	-1.02***	-0.96***	-0.90***
Second generation (ref)		(0.00)	(0.00)	(0.00)	(0.00)
<i>Household Head Characteristics</i>					
Female (yes=1)			0.29**		0.21
Age			0.01		0.01
Very English-proficient (yes=1)			0.86***		0.56***
Bilingual (yes=1)			-2.77***		-2.05***
College grad. (yes=1)			0.28***		0.27**
<i>Spouse Characteristics</i>					
Female (yes=1)				-0.26*	-
Age				0.02**	0.01
Very English-proficient (yes=1)				0.81***	0.54***
Bilingual (yes=1)				-2.57***	-1.77***
College grad. (yes=1)				0.09	-0.01
<i>Other household characteristics</i>					
Single Parent Family			-0.17		-
Has two immigrant parents			-0.86***	-0.65***	-0.16
No. of other proficient children			0.10*	0.13**	0.08
Family size			-0.09**	-0.13***	-0.09**
N	11,024	11,024	11,025	8,806	8,806

	Model 1	Model 2	Model 3	Model 4	Model 5
Log likelihood	-8970	-8,591	-7,687	-6,012	-5,827
Rho	0.84 ***	0.82 ***	0.74 ***	0.74 ***	0.73 ***

Note: Models 4 and 5 are only estimated for households with both household heads and spouses.

p<0.001

**
p<0.01

*
p<0.05

Table 3

Estimates of the factors associated with English proficiency among first and second generation children of African immigrants

	First generation		Second generation	
Language Background	Model 1	Model 2	Model 3	Model 4
Portuguese	-2.38 ***	-2.12 ***	-2.91 ***	-2.64 ***
Indigenous	-2.14 ***	-1.71 ***	-2.02 ***	-1.55 ***
Arabic	-1.97 ***	-1.81 ***	-2.03 ***	-1.79 ***
Other	-1.43 ***	-1.34 ***	-0.98 ***	-1.31 ***
English (ref)	(0.00)	(0.00)	(0.00)	(0.00)
Age	0.15 ***	0.13 ***	0.01	-0.01
Age at migration	-0.14 ***	-0.12 ***		
Males	0.02	0.03	0.10	0.13 *
Enrolled in School	1.03 ***	1.09 ***	-0.05	-0.10
Completed middle school	-0.13	-0.10	-0.29 **	-0.25 *
Single Parent Family		-0.27 **		0.25
Has two immigrant parents		-1.31 ***		-2.24 ***
No. of other proficient children		0.30 ***		0.23 ***
Family size		-0.21 ***		-0.25 ***
N	3,560	3,560	7,464	7,465
Log likelihood	-3,415	-3,369	-5,025	-4,780
Rho	0.77 ***	0.71 ***	0.86 ***	0.82 ***

p<0.001

**
p<0.01

*
p<0.05

Table 4

Estimates of the association between generational status and English proficiency for children from different language backgrounds.

Lang. Background and generational status	Model 1	Model 2	Model 3	Model 4	Model 5
<i>Portuguese</i>					
1.25 generation	-3.85 ***	-3.99 ***	-3.38 ***	-2.04 ***	-3.17 *
1.5 generation	-4.00 ***	-4.10 ***	-3.55 ***	-2.36 ***	-2.27 ***
1.75 generation	-3.52 ***	-3.55 ***	-3.07 ***	-1.91 ***	-1.76 ***
Second generation	-2.75 ***	-2.71 ***	-2.39 ***	-1.41 ***	-1.29 ***
<i>Indigenous</i>					
1.25 generation	-4.06 ***	-4.22 ***	-3.38 ***	-2.31 ***	-1.49 ***
1.5 generation	-3.90 ***	-3.99 ***	-3.10 ***	-2.08 ***	-1.36 ***
1.75 generation	-3.57 ***	3.51 ***	-2.75 ***	-1.81 ***	-1.09 ***
Second generation	-1.91 ***	-1.84 ***	-1.45 ***	-0.74 ***	0.13
<i>Arabic</i>					
1.25 generation	-3.26 ***	-3.40 ***	-2.91 ***	-2.00 ***	-2.01 ***
1.5 generation	-3.45 ***	-3.51 ***	-2.99 ***	-2.09 ***	-2.13 ***
1.75 generation	-3.15 ***	-3.11 ***	-2.68 ***	-1.88 ***	-1.77 ***
Second generation	-1.73 ***	-1.72 ***	-1.62 ***	-1.17 ***	-1.14 ***
<i>Other</i>					
1.25 generation	-2.71 ***	-2.85 ***	-2.64 ***	-1.80 ***	-1.53 ***
1.5 generation	-2.80 ***	-2.86 ***	-2.75 ***	-2.01 ***	-1.95 ***
1.75 generation	-2.17 ***	-2.15 ***	-2.05 ***	-1.49 ***	-1.45 ***
Second generation	-0.96 ***	-0.87 ***	-1.06 ***	-0.75 ***	-0.81 ***
<i>English</i>					
1.25 generation	-2.21 ***	-2.29 ***	-1.79 ***	-1.60 ***	-1.46 ***
1.5 generation	-1.88 ***	-1.95 ***	-1.48 ***	-1.36 ***	-1.30 ***
1.75 generation	-1.24 ***	-1.20 ***	-0.79 ***	-0.69 ***	-0.60 ***
Second generation (Reference)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
N	11,024	11,024	11,024	11,024	8,806
Log Likelihood	-8578	-8,556	-8,243	-7614	-5,989
Rho	0.82 ***	0.82 ***	0.77 ***	0.73 ***	0.74 ***

**p<0.01

p<0.001

*
p<0.05