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Title

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Permalink

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Journal

International Journal of Bilingual Education and Bilingualism, 24(8)

ISSN

1367-0050

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Publication Date

2021-09-14

DOI

10.1080/13670050.2018.1547680

Peer reviewed



Published in final edited form as:

Int J Biling Educ Biling. 2018 ; 2018: . doi:10.1080/13670050.2018.1547680.

Heritage Language Socialization in Chinese American Immigrant Families: Prospective Links to Children's Heritage Language Proficiency

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Abstract

Though a number of language socialization processes are theorized to promote children's heritage language proficiency (HLP), little research has considered these processes in a single study and examined their prospective relations to multiple domains of HLP in school-age children. In a two-wave longitudinal study of Chinese American children of immigrant parents ($N = 258$, age = 7–11 years), language socialization processes (e.g., adult HL use at home, parental attitudes towards HL, child participation in HL classes or extracurricular activities) were assessed using parent reports and behavioral observation at Time 1 (1st to 2nd grade). Children's HLP (Cantonese or Mandarin) was assessed using vocabulary and literacy tests at Time 2. Results of structural equation modeling showed that adults' Chinese language use with children at home predicted children's higher Chinese receptive and expressive vocabulary two years later, and children's participation in Chinese language extra-curricular activities predicted their higher Chinese receptive and expressive vocabulary and higher Chinese word reading. By contrast, parental valuing of Chinese language and children's exposure to Chinese media did not predict children's Chinese proficiency. These findings provided support for the benefits of HL use at home and HL classes in promoting HL development in children in immigrant families.

Keywords

Heritage language proficiency; immigrant families; language socialization

Proficiency in a "heritage language" (HL), a non-majority language spoken in, or inherited from the family context (Montrul, 2016; Valdés, 2001), plays an important role in the development and well-being of immigrant families. For many immigrants, heritage language proficiency (HLP) is closely tied to aspects of ethnic identity (Kim & Chao, 2009; Mu,

2015), such as a better understanding of ethnic group norms and values (Li, 1994) and positive attitudes toward one's ethnic group (He, 2011; Tse, 2000). Lower HLP among children of immigrant families has been associated with negative family processes such as poorer parent-child relationships and higher parent-child conflict, which in turn have been linked to children's higher emotional and behavioral problems (Chen, Hua et al., 2014; Costigan & Dokis, 2006). By contrast, higher HLP has been associated with higher-quality parent-child relationships (Oh & Fuligni, 2010) and higher academic achievement (Liu, Benner, Lau, & Kim, 2009) in children of immigrants. Fluency in both English and a family's HL has also been associated with lower internalizing problems among children of immigrants (Han & Huang, 2010).

HLP is particularly relevant to the development and well-being of Chinese American immigrant families, one of the largest, fastest-growing, and most socioeconomically-diverse foreign-born populations in the United States (Chen, Ly, & Zhou, 2016; Taylor et al., 2012). Similar to findings with other ethnic minority immigrant populations, Chinese language proficiency among children of Chinese immigrants has been associated with a number of positive outcomes, including better self-regulatory capacities (Chen, Zhou, Uchikoshi, & Bunge, 2014), higher social competence (Chen, Hua, et al., 2014), and higher academic achievement (Liu et al., 2009). Despite the benefits associated with HLP, previous research with Chinese American children has consistently reported decreases in HLP from childhood through young adulthood (Jia, 2008; Jia & Aaronson, 2003; Jia, Aaronson, & Wu, 2002). Furthermore, comparisons of HLP across ethnic groups indicate that loss in HLP is a particularly salient issue for Chinese immigrant families: some estimates indicate that more than 90% of third-generation Chinese immigrants speak only English at home, compared to only 60–70% of third-generation Hispanic immigrant families (Alba, 2004). Thus, conducting a systematic study of HL socialization in Chinese immigrant families and examining their links to children's HL proficiency is an important first step to inform research-based bilingual education.

There is considerable heterogeneity within Chinese American immigrant families with regard to HL use at home, parental values or attitudes towards HL, and other HL socialization practices (Xiao, 2008). Recent census data indicate that approximately 9% of China-born immigrants in the United States speak only English in the home, while approximately 11% do not speak English at all (Gambino, Acosta, & Greico, 2014). These variations in home language use may reflect variations in socioeconomic status (SES), ethnic identity, or parental attitudes toward the HL: while higher-SES Chinese American immigrant families may view Chinese maintenance as a valuable professional resource and encourage heritage language use in the home, lower-SES Chinese American immigrants may view Chinese maintenance as a hindrance to societal advancement or English acquisition (Li, 2006; Zhang, 2012). Similarly, Chinese immigrant parents who view HLP as an essential component of their family identity may enforce policies of speaking only Chinese in the home (Curdt-Christiansen, 2009), while parents who view English proficiency as a necessary means to overcoming racial discrimination may conversely speak only English in the home (Li, 2006b). Together, these demographic and sociocultural characteristics make Chinese American immigrant families a unique population in which to examine language socialization processes and their associations with HLP.

Language Socialization and Children's Heritage Language Proficiency

Recent theoretical models have positioned HLP within the framework of language socialization (He, 2011; Montrul, 2016). Although traditional models of family socialization focus primarily on explicit or intentional practices (e.g., behavioral modeling, didactic instruction), a key tenet of language socialization is that it also occurs through implicit processes (Duff, 2007), such as a child's interactions with other HL-speaking peers or exposure to HL-language media (Duff, 2012; Thorne, Back, & Sykes, 2009). Furthermore, language socialization processes can occur through proximal, direct contexts, such as direct linguistic input from parents, peers, or through formal classroom instruction (Koda, Zhang, & Yang, 2008); as well as through broader, abstract contexts, such as family or societal attitudes toward the HL (Lee, 2013; Park & Sarkar, 2008).

Findings from separate investigations suggest that both explicit and implicit means of language socialization can contribute to children's HLP. Parents' use of the HL in the family context, including enforcement of HL use in the home, has been positively associated with children's spoken HLP (Hinton, 1998; Jia, 2008). Similarly, more implicit processes such as the availability of HL reading materials and other HL media in the home have also been associated with HLP in early adulthood (Tse, 2001; Xiao, 2008). Outside of the home environment, participation in ethnic community activities has been associated with self-rated HLP among adults (Cho, 2000; Cho & Krashen, 2000), and peer attitudes have been found to steer children toward (Luo & Wiseman, 2000) or away from the HL (Caldas & Caron-Caldas, 2000; Tse, 2001).

Taken together, the research to-date provides broad support for the effects of various language socialization processes on HLP. However, previous investigations have relied largely on self- or parent-reports of children's HLP (Cho, 2000; Cho & Krashen, 2000; Luo & Wiseman, 2000), or self- or parent-reports of language socialization agents hypothesized to contribute to HLP (Hinton, 1998; Jia, 2008; Kondo-Brown, 2001). Furthermore, while language socialization models emphasize the consideration of multiple, interrelated contextual influences on HLP (He, 2011), relatively few investigations have identified a common factor structure underlying these various socialization processes, or examined their unique relations to objective measures of children's HLP. The few studies that have taken a more comprehensive examination of predictors of HLP across multiple sociocultural contexts have been limited to qualitative approaches (Tse, 2001), cross-sectional correlational analyses (Jia, 2008), or self-reports of HLP (Cho et al., 2000). As such, the unique and prospective contributions of socialization processes across multiple sociocultural contexts remain largely unknown.

Heritage Language Proficiency and Language Socialization in Middle Childhood

To-date, research on language socialization and HLP among children of immigrants has included investigations of preschool-aged children (Farver, Xu, Lonigan, & Eppe, 2013; Park, Tsai, Liu, & Lau, 2012), adolescents (Arriagada, 2005; Luo & Wiseman, 2000; Mori & Calder, 2015), and adults (Jia, 2008; Kondo-Brown, 2005; Xiao, 2008). By contrast,

relatively few investigations with children of immigrants have focused on predictors of HLP in school-age children or middle childhood – a developmental period during which the effects of language socialization may be particularly relevant for children’s HL development.

First, models of language acquisition suggest that middle childhood is a period of language fixation, such that proficiency in a first language maintained throughout middle childhood remains largely stable (Montrul, 2008). Applied to the present study, immigrant children who have maintained levels of HLP throughout middle childhood may be less vulnerable to HL loss later in life (Montrul, 2016).

Second, middle childhood has also been suggested as a critical period for the development of ethnic identity (Corenblum, 2014; Rogers et al., 2012) and a time during which children develop more complex conceptualizations of group membership (Aboud & Doyle, 1995; Aboud & Skerry, 1984; Akiba, Szalacha, & García Coll, 2004; Ruble et al., 2004). Though limited primarily to research with adolescents, previous investigations have documented positive associations between immigrant children’s frequency of interactions with same-ethnicity peers and their HLP (Luo & Wiseman, 2000; Phinney, Romero, Nava, & Huang, 2001; Tse, 2010). Furthermore, positive relationships with members of their ethnic group are a central component of ethnic identity in immigrant youth (Oh & Fuligni, 2010), which in turn has been associated with their HLP (Mu, 2015; Kim & Chao, 2009). Taken together, language socialization processes that emphasize children’s ethnic identity, such as friendships with same-ethnicity peers, may also foster greater interest in developing HL, and it is likely that these processes unfold during middle childhood.

Third, middle childhood marks a time of significant development in social contexts, in that children begin to spend an increasing amount of time with peers and less time with their parents (Hill & Stafford, 1980; Lam, McHale, & Crouter, 2012). This shift in social contexts is accompanied, accordingly, by changes in the way parents monitor their children’s activities, from more direct, restraint-oriented practices to more distal monitoring practices that emphasize the children’s own internal control (Maccoby, 1984). As their time spent with peers increases during elementary school, children who have friends sharing their HL can be expected to have higher HLP compared with children with fewer HL-speaking friends (Caldas & Caron-Caldas, 2000). At the same time, as their children spend more structured time outside of the home during middle childhood, immigrant parents may seek to actively maintain their child’s HL exposure through other means, such as enrollment in extra-curricular heritage activities, increased exposure to HL media in the home, and through distal monitoring practices, such as emphasizing the importance of HLP.

Links of Family Socio-Demographic Factors to Children’s Heritage Language Proficiency

In addition to family heritage language socialization practices, we also examined the links of family socio-demographic factors to children’s HL proficiency. Successive immigrant generations show an increasing preference for the dominant language of the host country, and this common outcome of acculturation frequently results in the loss of HLP (Alba, Logan, Lutz, & Stults, 2002; Fillmore, 1991). Indeed, the challenge of maintaining HLP

across immigrant generations has been well-documented across immigrant groups in the United States, and specifically within Chinese American immigrants (Kim & Chao, 2009; Oh & Fulgini, 2010). As such, we expected that children's generational status would be negatively associated with children's Chinese proficiency, such that second-generation Chinese American immigrants (those born in the U.S.) would have lower Chinese proficiency than their first-generation peers (those born outside of the U.S.). Also consistent with previous research (Koda et al., 2008), we expected that older children would have higher proficiency in Chinese literacy.

Previous research examining associations between family SES and HLP among children of Chinese immigrants has yielded mixed results, with some indicating lower HLP among children from lower-SES families (Li, 2006a; Zhang, 2012), and others documenting opposite results (Jia, 2008). In consideration of the range of domains of HLP assessed in the present study, we had separate exploratory hypotheses for Chinese literacy, receptive vocabulary, and productive vocabulary. First, as higher-SES families may have the time and resources to invest in formal Chinese language classes for their children, it is possible that higher-SES may be positively associated with children's Chinese literacy. However, higher family SES may also be associated with less daily exposure to spoken Chinese, as higher-SES immigrant parents with may be more fluent in English and less likely to live in or near ethnic enclaves (Leventhal & Brooks-Gunn, 2000). As such, higher-SES may be negatively associated with children's receptive and productive Chinese vocabulary.

The Present Study

In sum, theories of language socialization suggest that immigrant children's HLP may be influenced by both explicit and implicit socialization processes, and developmental theories suggest that these effects may be particularly salient during middle childhood. Given wide within-group variation in their HL use (Gambino et al., 2014; Ramakrishnan & Ahmad, 2014; Xiao, 2008), children's HLP (Hendryx, 2008), and parental values toward maintaining HLP (Li, 2006; Xiao, 2008), Chinese American immigrant families are an ideal population in which to examine these processes. However, the relatively few investigations examining HLP among school-aged Chinese American children have been limited by a number of methodological designs, including retrospective self-reports (Jia, 2008); cross-sectional designs (Zhang & Koda, 2011), and small samples (Jia & Aaronson, 2003; Jia & Bayley, 2008; Koda et al., 2008). Moreover, the wide range of language socialization practices examined in previous research (e.g., formal instruction, media exposure, social interactions) underscores the need to identify the common factors underlying these practices, and to test their unique contributions to children's HLP.

To address these gaps in the literature, the present study used a two-wave longitudinal design to identify elements of language socialization contributing to HLP in elementary-aged Chinese American immigrant children. Both behavioral observations and parent reports were used to assess language socialization practices across a broad spectrum of domains (e.g., spoken language, media exposure, values, social relationships, activities). In contrast to self- or parent-reported measures of HLP, the present study also used objective language tests to measure children's proficiency across three domains of Chinese language: expressive

vocabulary, receptive vocabulary, and literacy (i.e., Chinese character recognition). The study had two main goals: a) to examine the factor structure of HL socialization processes in Chinese American immigrant families; and b) to test the prospective relations of HL socialization processes to objective measures of children's HLP, controlling for family socio-demographic variables. We had three main hypotheses. *First*, as receptive language skills can be considered the most foundational level of HL acquisition (Krashen, Terrell, Ehrman, & Herzog, 1984), we expected that all of the targeted language socialization processes would positively predict children's Chinese receptive vocabulary. *Second*, in considering sociocultural contexts in which children would be required to speak Chinese, we expected that Chinese language use with caregivers, caregivers' emphasis on the importance of Chinese proficiency, participation in formal Chinese language programs, and participation in Chinese-language extra-curricular activities would be positively associated with children's productive Chinese vocabulary. *Finally*, given the unique morphological demands of Chinese literacy (Koda et al., 2008), we expected that children's Chinese literacy would be positively and uniquely associated with their participation in extracurricular Chinese language instruction and their exposure to Chinese language media.

Method

Participants

Data were collected from an ongoing longitudinal study of 258 Chinese American immigrant families. Children were either first-generation (i.e., born outside the United States) or second-generation immigrants (i.e., born in the United States immigrants with at least one foreign-born parent). As part of the larger study protocol, one child and one parent from each participating family completed a 2.5-hour multi-method laboratory assessment. Analyses for the present study were conducted with data from Time 1, when children were in first or second grade, and Time 2, when children were in third, fourth, or fifth grade. Family demographic characteristics and language socialization processes were assessed at Time 1. Children's Chinese literacy (i.e., character recognition), productive vocabulary, and receptive vocabulary were assessed at Time 2. Mean time between assessments for the present sample was 1.91 years ($SD \pm .26$ years, range = .66 to 3.24 years).

Measures

Family characteristics—The majority of the participating parents (97.6%) were born outside of the United States, with 75.7% born in Mainland China, 10.0% born in Hong Kong, 5.7% born in Vietnam, 3.3% born in Taiwan, 1.9% born in Burma, 1% born in Singapore, and 0.5% born in Cambodia. At the time of initial assessment, parents had spent an average of 13.5 years ($SD=7.62$), or 29.65% of their lives in the United States ($SD=18.42$). At both Time 1 and Time 2, parents had a mean level of 13.3 years of education ($SDs =2.4$ and 2.9 , respectively). Estimated per capita income ranged from \$625 to over \$50,000 at Time 1 ($M=\$11,432.74$, $SD=\$8,237.97$), and from \$1,000-\$33,333.33 at Time 2 ($M=\$11,653.57$, $SD=\$8035.46$). Based on parents' reports, 58.1% of children at Time 1 and 60.8% at Time 2 were eligible for free or reduced lunch at their schools, a commonly used index of family socioeconomic status (Sirin, 2005).

Child characteristics—Children (52% boys) were between 5.8 years and 9.1 years old at Time 1 ($M=7.4$ years, $SD=.72$). At Time 1, most children were in either first (44.8%) or second (54.3%) grade, and most (75%) were second-generation Chinese American immigrants (i.e., born in the United States). The remaining children were born in mainland China (21.6%), Hong Kong (1.9%), Macau (0.5%), Vietnam (0.5%), and England (0.5%). At Time 2, children (48% boys) were between 7.5 and 11 years old ($M=9.2$ years, $SD=.73$), and 77% were second-generation Chinese American immigrants. At Time 2, 2.9% of children were in second grade; 45.6% were in third grade, 47.7% were in fourth grade, and 3.8% were in fifth grade. Of the children who completed Time 2 assessments, the majority spoke solely Chinese (80.9%) or both Chinese and English (15.3%) when they were first learning to speak.

Measures

Language Socialization Processes—Language socialization processes were assessed at Time 1 of the assessment using a combination of observed and parent-reported measures.

Family use of heritage language with child: The frequency with which the participating parent and other adults in the household spoke Chinese to the participating child was assessed using both parent-reported and observed measures.

Parent-reported use of heritage language: Parents reported whether each adult in the household used Chinese, English, or both Chinese and English when speaking to the child (“What language is mostly spoken in your home from [adult] to the child?”). Scores for each adult were recoded, with “2” indicating use of Chinese, “1” indicating use of both Chinese and English, and “0” indicating use of English. The use of Chinese when speaking to the child was positively correlated among adults (r s ranged from .34 to .54; p s < .001). Scores for each adult’s spoken language to the child were summed to create a single composite score.

Observed use of heritage language: Parents’ observed Chinese language was assessed using a 5-minute behavioral interaction task with the participating child. The parent and child worked together on a timed puzzle box task (see Eisenberg, Gershoff, et al., 2001 for detailed procedure). The parent and child were left alone in the room during the task, although their performance was recorded by two visible video cameras. Parents’ use of Chinese was independently coded by two bilingual research assistants blind to study hypotheses (inter-rater reliability $r=0.96$). After watching each interaction, coders assigned a score indicating the relative amounts of Chinese and English used by parents during the interaction. Scores ranged from -2 (exclusively Chinese), 0 (equal amounts of English and Chinese), to 2 (exclusively English). Scores were reverse-scored so that higher scores reflected more frequent Chinese use.

Exposure to Heritage Language Media: Parents reported the frequency of children’s exposure to different forms of Chinese-language media. Four items from the Cultural and Social Acculturation Scale (CSAS; Chen & Lee, 1996) were used to estimate the frequency with which children read Chinese-language print media, watched Chinese movies, listened

to Chinese radio, and listened to Chinese music on a Likert scale of 1 (“Almost never”) to 6 (“Almost everyday”). Parents also estimated the number of hours the participating child spent watching Chinese language visual media each day, as well as the frequency with which an adult in the home read to the child in Chinese (1 “every day”; 2 “2–3 times a week”; 3 “once a week”; 4 “2–3 times a month”; 5 “once a month”).

Social Relationships with Same-Ethnicity Peers: Three items from the CSAS (Chen & Lee, 1996) were used to assess children’s relationships with other ethnic Chinese peers. Parents estimated the number of the participating child’s Chinese friends, the frequency with which the child was invited to the gatherings of Chinese friends’, and the frequency with which the child had Chinese friends over to his/her own home.

Heritage Language Activities: Parents reported the number of times per week that the child participated in formal Chinese instruction outside of regular school hours, and the number of extra-curricular activities conducted entirely or partially in Chinese. Activities conducted entirely in English were coded as “0”, activities conducted in both Chinese and English were coded as “0.5”, and activities conducted entirely in Chinese were coded as “1”.

Importance of Heritage Language Proficiency: Parents rated the importance of the participating child’s HLP using one item from the CSAS (Chen & Lee, 1996) (“Do you require your child to speak Cantonese/Mandarin at home?”; 1 = “Almost never”; 3 = “All the time”), and two items assessing the importance of the child’s ability to speak Chinese and to read and write in Chinese (1= “not important at all”; 5 = “very important”).

Children’s Heritage Language Proficiency

Three measures were used to assess children’s Chinese proficiency at Time 2. To assess children’s receptive vocabulary, children were administered the Chinese version of the Peabody Picture Vocabulary Test-Revised (PPVT-R; Lu and Liu, 1998). Reported split-half reliability from the norms for native Chinese-speaking children is .95 (Lu & Liu, 1998). To assess children’s productive vocabulary, ten items of increasing difficulty were selected from the Chinese version of the PPVT-R. Children were provided with an English word, and asked to say the word in Chinese (Mandarin or Cantonese). To assess children’s character recognition, children were presented with a sheet containing 20 Chinese characters of increasing complexity that are commonly used in texts encountered by beginning readers (Gottardo et al., 2001; 2006). Children were asked to identify as many words as they could. Characters were presented in both traditional and simplified Chinese characters. Children were given one point for providing the correct Chinese pronunciation for each character, for a maximum of 20 points. Children were given partial credit (0.5 points) if they were unable to provide the Chinese pronunciation for the character, but indicated some recognition of the character (e.g., provided the correct English meaning).

Results

The descriptive statistics of study variables are presented in Table 1. Variables were first screened for normality. Using the cutoffs of two and seven for skewness and kurtosis, respectively (West, Finch, & Curran, 1995), one variable was negatively skewed (most

parents placed a high value on the importance of speaking Chinese). Given the presence of non-normal variables, the full model was estimated using maximum likelihood estimation with robust standard errors (Muthén and Muthén, 1998).

Relations between Demographic Factors, HL Socialization and HL Proficiency

As previous research has theorized effects of family SES, child generational status, and child age on both HLP and/or parent cultural socialization processes, zero-order correlations examined associations between these demographic variables, language socialization processes, and the three domains of HLP (the full correlation matrix is included in Supplemental Materials). A composite index of family SES at Time 1 was computed by first averaging maternal and paternal education levels and then averaging the standardized scores of parental education and per capita income. Consistent with previous research, children born in the US (i.e., second-generation Chinese Americans) had lower scores on all domains of HLP (r s between -0.18 and -0.24 ; p s all $< .01$), less exposure to spoken Chinese during the observed task, and less exposure to Chinese media in the home (r s between -0.14 and -0.26 ; p s $< .05$). Parents of second-generation Chinese Americans also placed less importance on Chinese literacy ($r = -0.13$, $p = .042$). Older children scored higher on Chinese literacy and receptive vocabulary (r s = 0.24 and 0.55 , p s = $.000$, respectively) and had more frequent exposure to Chinese reading from the parent than younger children ($r = 0.14$, $p = .04$). Finally, higher family SES was associated with lower emphasis on the importance of reading and writing Chinese ($r = -0.23$, $p = .000$) and less enforcement of Chinese being spoken in the home ($r = -0.19$, $p = .003$); less-frequent exposure to Chinese visual media ($r = -0.27$, $p = .000$); fewer Chinese friends ($r = -0.15$; $p = .019$); and less-frequent use of Chinese from adults to the child (r s between $-.34$ and $-.43$, p s = $.000$). Higher family SES at Time 1 was also associated with children's lower Chinese productive vocabulary at Time 2 ($r = -0.16$, $p = .013$). Given these associations, child generation status, child age (at Time 2), and family SES (at Time 1) were included as covariates in the structural equation model.

Structural Equation Modeling

As informed by previous theory and research in HLP among immigrant and ethnic minority youth, a five-factor CFA model was tested to identify the factor structure of HL socialization processes: (a) parents' observed language during the behavioral task, parents' reports of adults in the household speaking Chinese to the child, and parents' reading to the child in Chinese were hypothesized to load on the latent factor of adults' spoken Chinese to child; (b) the child's frequency of exposure to Chinese-language radio, TV, movies, books, and general visual media (DVDs, videos) was hypothesized to load on the latent factor of the child's exposure to Chinese-language media, (c) the child's number of Chinese friends, the frequency of the child's inviting Chinese friends over to the home, and the frequency of being invited to Chinese friends' homes were hypothesized to load on the latent factor of the child's relationships with Chinese peers; (d) parent-reported importance of the child's ability to speak, read and write in Chinese, and the requirement for Chinese to be spoken in the home were hypothesized to load on the latent factor of the parental beliefs regarding the importance of their child's proficiency in Chinese; and (e) the child's participation in formal Chinese language instruction and extra-curricular activities conducted in Chinese were

hypothesized to load on the latent factor of the child's participation in Chinese-language extra-curricular activities.

Based on cutoffs of comparative fit index $.95$, standardized root mean square residual $.08$, and root mean square error of approximation $.06$ as criteria for a relatively good fit (Hu & Bentler, 1999), the original model indicated average fit, $\chi^2(94, N = 258) = 154.82$, $p < .001$, comparative fit index/CFI = $.92$, root mean square error of approximation/RMSEA = $.05$, standardized root mean square residual/SRMR = $.059$. An examination of factor loadings and modification indexes (MIs) and residuals of the covariance matrix suggested that the lack of fit came primarily from two items (parents' requiring Chinese to be spoken in the home; frequency of looking at Chinese books) with significant cross-loadings on other factors (adults' speaking Chinese to child; participation in Chinese language extra-curricular activities, respectively). After assigning these two items to the respective latent variables, the revised model fit the data well, $\chi^2(94, N = 238) = 111.374$, CFI = 0.98 , RMSEA = $.027$, SRMR = $.046$. All items had significant and positive loadings on their designated factors.

To test the hypothesized relations between language socialization and children's HL proficiency, we specified and tested a structural equation model in which direct paths were estimated from all language socialization processes to children's Chinese receptive vocabulary; from adult's spoken Chinese, importance of Chinese proficiency, relationships with Chinese peers, exposure to Chinese media, and children's participation in Chinese-language extra-curricular activities to children's Chinese productive vocabulary; and from children's exposure to Chinese media and participation in Chinese-language extra-curricular activities to Chinese literacy. Direct paths were also estimated from children's generational status, children's age at Time 2, and family SES at Time 1 to all domains of HLP. Finally, direct paths were estimated from Time 1 predictors of parent-reported HL to each respective domain of HLP at Time 2. The model was estimated with Mplus 7.3 (Muthén & Muthén, 1998–2014) using full information maximum likelihood to handle missing data and the Maximum Likelihood Robust (MLR) estimator for adjustment to correct standard errors for non-normality (Muthén & Muthén, 1998–2014). The predictors in the model were allowed to be correlated with each other, as were the three indicators of HLP.

The full model fit the data well ($\chi^2(220, N = 238) = 263.32$, CFI = $.97$, RMSEA = $.029$, SRMR = $.052$ (Figure 1)). All items had significant and positive loadings on their designated latent factors. Consistent with hypotheses, three language socialization factors uniquely and positively predicted both children's receptive and productive Chinese vocabulary: 1) frequency of adults' speaking Chinese to children at home, 2) child's participation in Chinese-language extra-curricular programs, and 3) children's exposure to Chinese media, though the associations with exposure to Chinese media were only marginally significant. Furthermore, children's participation in Chinese language extra-curricular activities uniquely and positively predicted their Chinese character recognition.

Some hypotheses were not supported. While we expected that language socialization processes would positively predict children's receptive vocabulary, parental beliefs regarding the importance of Chinese and children's relationships with Chinese friends were not significantly associated with children's receptive vocabulary. Overall, neither parents'

beliefs about the importance of Chinese proficiency nor children's relationships with Chinese friends were uniquely predictive of any domains of Chinese proficiency.

Though not displayed in the model, associations between demographic characteristics and Chinese proficiency were generally consistent with hypotheses and previous research. Second generation children had lower proficiency in Chinese literacy (standardized estimate = $-.14$, $p = .025$). Older children demonstrated higher proficiency in Chinese literacy (standardized estimate = $.23$, $p = .000$) and receptive vocabulary (standardized estimate = $.24$, $p = .000$). Contrary to hypotheses, family SES was positively associated with higher receptive vocabulary (standardized estimate = $.30$, $p = .004$). Consistent with hypotheses, family SES was also positively associated with higher Chinese literacy (standardized estimate = $.11$) but only at marginal levels of significance ($p = .073$).

Discussion

The maintenance of HLP across immigrant generations, particularly when the HL is a non-majority language in the broader societal context, is a challenge that has been well-documented in the research literature (Alba, et al., 2002; Fillmore, 1991; Fishman, 1991). By applying a language socialization framework to the study of HLP in children of immigrant parents, the present study identified specific socialization processes with unique, cross-time contributions to different domains of children's HLP. Furthermore, by examining these processes in middle childhood, the present study focused on a key developmental period for the growth, solidification, or loss of HLP. In general support of our hypotheses, children's participation in Chinese language extra-curricular activities, including formal Chinese language instruction, was the only language socialization process that was uniquely associated with their Chinese character recognition; participation in Chinese language extra-curricular activities was also associated with children's Chinese receptive and productive vocabulary. Also consistent with hypotheses, the frequency with which adults spoke Chinese to the child was uniquely associated with their receptive and productive Chinese vocabulary. Contrary to hypotheses, children's relationships with ethnic Chinese friends, their exposure to Chinese language media, and parental beliefs regarding the importance of HLP were not uniquely associated with any domains of children's HLP.

Language Socialization Factors

Models of language socialization include processes that are transactional, explicit or implicit, and which can occur across a variety of social contexts (Duff, 2007; He, 2011; Ochs & Schieffelin, 2011). As such, the first goal of the current investigation was to integrate the breadth of these various socialization processes into a single model and to identify their underlying factor structure. The resulting five-factor model provided empirical support for central tenets of language socialization theory, namely, that language socialization can include both implicit and explicit processes, and can also occur in both proximal and distal contexts.

Immigrant parents seeking to maintain or develop their children's HLP may engage in explicit socialization practices, such as enrolling their children in HL schools or in extra-curricular programs taught in their HL (Koda et al., 2008). At the same time, HL

socialization can also include implicit processes which may not be parent-initiated, and which may not have been initiated with the explicit intent of developing children's HLP. For example, data from the present study identified both HL media engagement and relationships with Chinese peers as distinct factors. These processes may have been child-initiated (e.g., children seeking out their own peer group; children initiating engagement with Chinese-language media), and are likely to include informal HL-learning (e.g., using Chinese to communicate during play). Indeed, these forms of implicit HL socialization may be especially salient as children progress through middle childhood, as parents have less direct involvement in both their children's peer group interactions (Lam, McHale, & Crouter, 2014) and their engagement in media (Gentile, Nathanson, Rasmussen, Reimer, & Walsh, 2012), and also allow their children increasing autonomy in decision-making (Wray-Lake, Crouter, & McHale, 2010).

Also consistent with language socialization frameworks, identification of the five-factor structure indicated socialization processes across both proximal and distal contexts. At the most proximal level, one factor represented the frequency with which adults spoke directly to the child in Chinese. Notably, this factor included parent-reported and observed indices, a measure of the Chinese spoken by all adults in the household, as well as the frequency of Chinese spoken across different contexts (i.e., everyday conversation and reading to the child in Chinese). At the most distal and abstract level, data from the present study also identified a factor reflecting the importance parents placed on their child's HLP. As such, the quantitative data from the current study complements previous qualitative research suggesting that family or societal views of the HL serve as an important factor in language socialization (Lee, 2013; Park & Sarkar, 2007).

Language Socialization Factors and HLP

Identifying the factor structure of language socialization processes allowed us to test the concurrent relations among these factors, their associations with socio-demographic factors, and their prospective effects on domains of children's HLP. Two patterns of results from the full model may be particularly noteworthy in advancing understanding of language socialization and HLP. First, while only two socialization factors were uniquely predictive of various domains of HLP, a number of socialization factors were positively associated with each other. For example, while associations between children's exposure to Chinese media and their receptive and productive vocabulary were only marginally significant, children's exposure to Chinese media was significantly and positively associated with the frequencies with which adults spoke Chinese to the child. Similarly, while parents' beliefs about the importance of Chinese language were not uniquely predictive of HLP, this socialization factor was also positively associated with adults' frequency of spoken Chinese to the child, as well as with the child's exposure to Chinese media.

Though beyond the scope of the present study, the interrelations among these factors can inform future investigations of indirect socialization processes on children's HLP. As suggested by other research with media exposure and children's language development (Strouse, O'Doherty, & Troseth, 2013; Troseth, Russo, & Strouse, 2016), children's exposure to Chinese language media may need to be accompanied by active parent

engagement and facilitation in order to impact their HLP. Likewise, in isolation, a parent's belief in the importance of their child's HLP may not promote HL development; rather, its effects on HLP may be mediated through more explicit efforts of speaking Chinese to their child.

Second, results from the full model highlight the importance of examining specific language socialization processes as they relate to distinct domains of HLP. Though much of the existing research on HLP has focused on explicit socialization practices, such as formal language instruction (Kim, 2011; Koda et al., 2008; Lawton & Logio, 2008), or on single domains of HLP such as literacy or productive vocabulary, the integrative approach of the present study provided a more nuanced understanding of the complex relations between language socialization and HLP. As hypothesized, participation in Chinese-language extra-curricular activities was predictive of HLP in all domains (i.e., receptive vocabulary, productive vocabulary, and character recognition), and was the only socialization factor uniquely predictive of Chinese character recognition. The frequency with which adults spoke Chinese to the child, as assessed by both observed and parent-reported measures, was also uniquely predictive of children's receptive and productive vocabulary. Taken together, these results can inform language socialization processes as they relate to specific goals of HLP. Goals of HL literacy, particularly in languages whose writing systems differ from those of the dominant context, may be best achieved through explicit and didactic socialization practices such as formal linguistic instruction. By contrast, immigrant parents aiming to help their child achieve speaking or listening proficiency in their HL may do so through consistent conversations in their HL.

Strengths and Limitations

The present study integrated a number of methodological approaches that have, to-date, been underutilized in investigations of HLP in immigrant families. In addition to incorporating both observed and parent-reported measures of language socialization processes, the current investigation relied on objective, rather than self- or parent-reported assessments of HLP. Examination of these processes in a large, socioeconomically diverse sample of immigrant families also allowed demographic characteristics to be tested as predictors of HLP. Finally, structural equation modeling of longitudinal data allowed for the identification of the factor structure of language socialization processes, as well as the identification of unique, cross-time predictors of multiple domains of HLP.

In addition to these strengths, certain limitations of the present study merit mention and highlight directions for future research. First, while the longitudinal model controlled for effects of children's baseline levels of Chinese proficiency using parent reports of literacy, spoken fluency, and comprehension; these measures provided only rough equivalents to the objective measures of Chinese proficiency at Time 2. Similarly, while our conceptual model specified language socialization processes as a unidirectional predictor of children's Chinese proficiency, a more comprehensive conceptualization of language socialization would include transactional or interactional processes that involve children's active, reciprocal involvement in communicative practices, both within and outside of the family context (He, 2011; Ochs & Schieffelin, 2011).

Variations in children's baseline HLP, abilities in language retention or acquisition, or affinity for the HL, can also shape language socialization processes over the course of development. For example, compared to children with lower HLP, children with higher HLP may elicit more spoken Chinese from adults and other caregivers, and may adapt more readily to formal HL instruction. Likewise, children who demonstrate greater interest in HL acquisition may be more likely to engage in Chinese language media and more receptive to increasing participation in Chinese-language extra-curricular activities over time.

A closer investigation of interactional language socialization processes can also identify the conditions under which friendships with same-ethnicity peers can contribute to HLP. In contrast to previous research (Phinney et al., 2001; Tse, 2010), children's friendships with other Chinese-American children were not significant predictors of their HLP. One possible explanation for these findings is that Chinese-American peers were not necessarily Chinese language speakers. Thus, similar to approaches used by Luo and Wiseman (2000), a more nuanced investigation of interactional processes in HLP would assess not only the ethnic composition of the child's friends, but also the languages spoken most frequently within these social circles.

Finally, additional research is needed to identify the precise mechanisms through which family SES shapes language socialization processes and children's HLP. In the present study, lower-SES families reported more HL socialization processes, and children from lower-SES families also had higher productive Chinese vocabulary. These results are consistent with prior research (Jia, 2008) and may lend some support to traditional conceptualizations of lower-SES immigrants being concentrated in ethnic enclaves (Leventhal & Brooks-Gunn, 2000), where children are presumed to have greater exposure to the HL. However, more recent research has challenged this view of the socioeconomically-disadvantaged ethnic enclave, and indicates that high-concentrations of Chinese American immigrants may also be found in higher-SES "ethnoburbs" (Lee et al., 2014; Li, 2005; Zhang & Logan, 2015). As such, the associations between lower-family SES, language socialization practices, and children's HLP may not necessarily be attributed solely to neighborhood composition, but could also reflect the effects of more proximal ecological factors. For example, Chinese immigrant parents with lower levels of education may be limited in their English proficiency, which would necessitate regular use of the HL in interactions with their children, and would likely expose the child to HL media in the home.

Conclusions and Implications for Education

HLP among children of immigrants plays a critical role in family well-being and social and emotional development. By identifying specific processes of language socialization contributing to children's HLP, results of the current investigation provide preliminary targets for immigrant parents aiming to maintain or develop their child's HLP. Specifically, our results suggest that two language socialization processes – the frequency with which adults speak Chinese to the child, and children's participation in Chinese-language extra-curricular activities - can uniquely benefit different domains of children's HLP. Immigrant parents aiming to foster their children's HL literacy, particularly in a logographic language system such as Chinese, can best achieve this goal through formal language classes or extra-

curricular activities in which the HL primary language of instruction. Immigrant parents aiming to develop or maintain their children's ability to speak and understand their HL can do so through frequent use of their HL in conversation. Educators and HL teachers can likewise encourage immigrant parents to speak in the HL at home, and also encourage students' participation in HL extra-curricular classes. As suggested by previous research, Chinese American children learning Chinese as a HL are able to develop literacy in both English and Chinese simultaneously (Buckwalter & Lo, 2002), and literacy in both Chinese and English may confer advantages in domains of executive function (Chen et al., 2014).

More broadly, and consistent with previous theory and research, results from the present study suggest that middle childhood is a key developmental window for HLP maintenance and development (Montrul, 2008). As middle childhood represents a time of children's increasing independence and extra-curricular involvement (Hill & Stafford, 1980), parents and educators seeking to develop children's HLP may benefit by maintaining their engagement in HL-language extra-curricular activities. Likewise, continued longitudinal research is needed to test whether HLP in middle childhood predicts continued proficiency into adolescence and adulthood, and even across successive immigrant generations.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

Data collection for this project has been supported by the Foundation for Child Development Young Scholars Program and Hellman Family Fund to Qing Zhou and a National Science Foundation Graduate Research Fellowship to Stephen H. Chen. Zhou and Uchikoshi's work on this paper has also been supported by a grant (R01HD091154) from the Eunice Kennedy Shriver National Institute of Child Health & Human Development (National Institute of Health). We thank Keira Chu, Nancy Lau, Howard Liu, and the undergraduate students at the University of California, Berkeley, for assisting in participant recruitment, data collection, and data management, as well as the parents, teachers, and school staff for participating in or contributing to the study.

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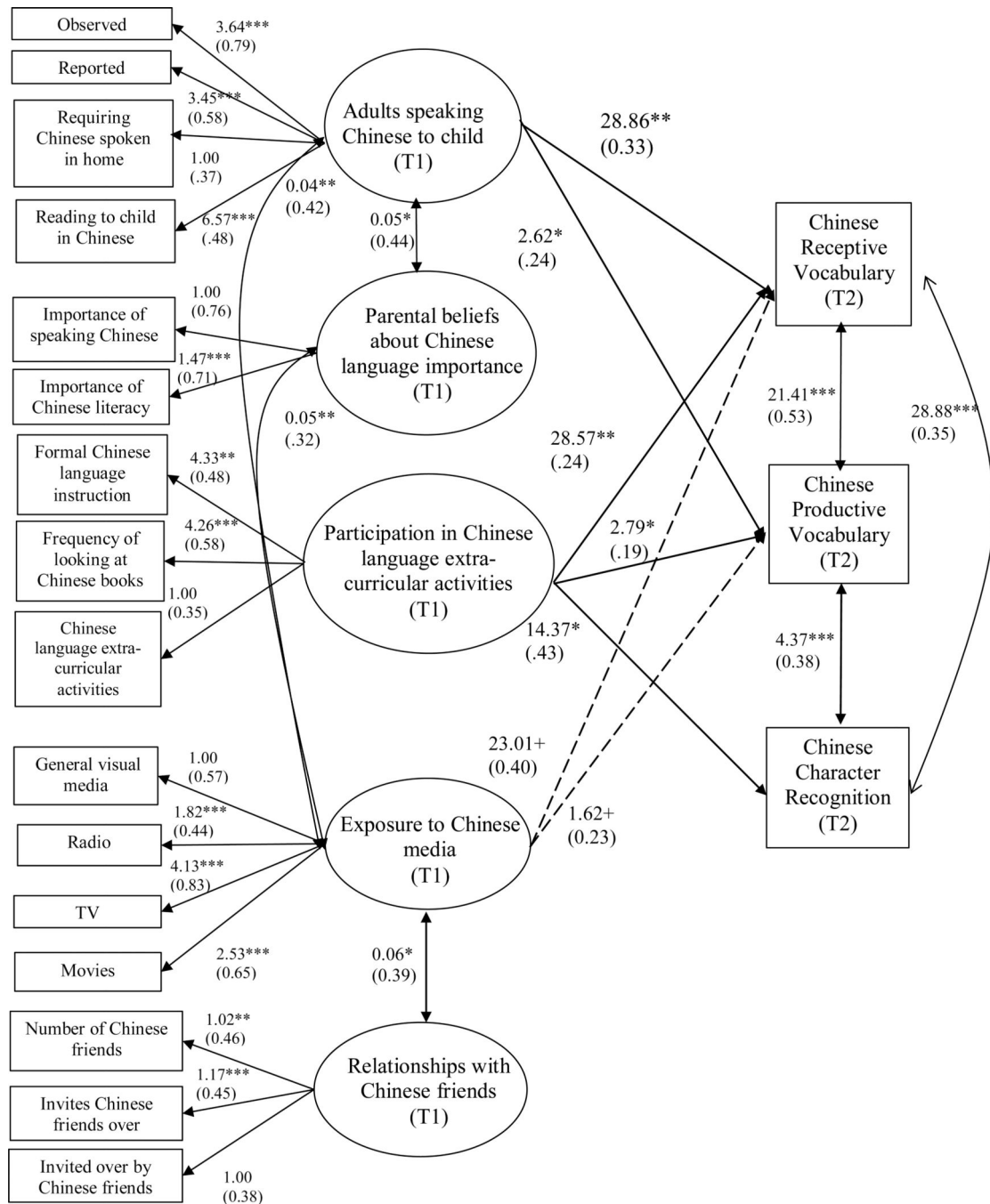


Figure 1. The model testing language socialization factors as predictors of children’s heritage language proficiency. For ease of presentation, only significant paths are shown. Effects of Time 1 Chinese proficiency, children’s generational status, children’s age at Time 2, and family SES are controlled but not shown in the model. Numbers above parentheses are unstandardized loadings or path coefficients; numbers inside parentheses are standardized loadings or path coefficients. *** $p < .001$; ** $p < .01$; * $p < .05$; + $p < .10$

Table 1

Descriptive Statistics of Study Variables

	<i>N</i>	<i>M</i>	<i>SD</i>	Range	Skew	Kurtosis
<i>Time 1 Cultural Socialization Variables</i>						
Chinese school instruction	244	1.28	1.68	0.00–7.00	1.59	1.28
Number of Chinese Extracurricular Activities	257	0.32	0.53	0.00–3.00	1.75	3.27
Importance of Speaking Chinese	249	4.78	0.54	2.00–5.00	–2.55	6.09
Importance of Reading/Writing Chinese	250	4.42	0.88	1.00–5.00	–1.28	0.60
Requiring child to speak Chinese at home	256	2.52	0.69	1.00–3.00	–1.11	–0.84
Frequency of having Chinese friends over	252	2.37	1.01	1.00–5.00	0.61	0.02
Child's frequency of being invited to Chinese friends' homes	254	2.45	1.00	1.00–5.00	0.70	0.11
Child's number of Chinese friends	254	3.32	0.85	1.00–4.00	–0.91	–0.38
Frequency of parent reading to child in Chinese	220	2.45	3.43	0.00–10.00	0.91	–0.84
Hours of Chinese visual media per day	214	0.66	0.69	0.00–3.00	1.23	1.41
Number of Chinese books in home	243	1.88	0.82	1.00–3.00	0.23	–1.49
Child's frequency of looking at Chinese print media	251	1.84	1.37	1.00–6.00	1.70	1.96
Child's frequency of watching Chinese movies	251	2.65	1.49	1.00–6.00	0.84	–0.15
Child's frequency of listening to Chinese radio	250	1.99	1.57	1.00–6.00	1.46	0.84
Child's frequency of listening to Chinese music	251	3.69	1.88	1.00–6.00	–0.07	–1.48
Caregivers' spoken Chinese to child (parent report)	252	4.52	1.51	0.00–6.00	–0.92	0.14
Parent's spoken Chinese to child (observed)	258	1.08	1.17	–2.00–2.00	–1.76	1.75
<i>Time 2 Chinese Proficiency Variables</i>						
Literacy (Character recognition)	238	9.64	6.34	0.0–20.0	–0.01	–1.23
Receptive vocabulary	220	48.27	22.44	2.00–119.0	0.24	–0.29