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Student attitudes and Cantonese proficiency in a Cantonese dual immersion school

Lu Yang,

University of California, Davis

Genevieve Leung,

University of San Francisco

Rosina Tong, and

San Francisco Unified School District

Yuuko Uchikoshi

University of California, Davis

Abstract

Previous research reports the positive impact of dual immersion programs on students' language proficiency, yet fewer studies have examined students' attitudes in such programs. The current study examined student attitudes and language proficiency in a Cantonese dual immersion school and explored relationships between students' attitudes and language proficiency in Cantonese. Language proficiency results showed that, on average, Cantonese immersion student performances indicated attainment of Intermediate High level in listening, Novice Mid level in reading, and Novice High level in writing. In addition, heritage learners outperformed non-heritage learners in reading and listening skills. Survey data revealed that heritage learners held more positive attitudes toward learning Cantonese compared to non-heritage learners but that there were no differences in attitudes toward the focal school between the two student groups. Regression analysis revealed that students' attitudes towards the dual immersion school explained significant variance in their Cantonese reading, listening and speaking skills. Qualitative data also revealed that students' positive attitudes toward their school were shaped by their experiences with their principal, teachers, and school activities. These findings shed light on the role that positive school and learning environments play in helping dual language immersion school students acquire proficiency in the partner language.

Keywords

attitudes; dual language immersion; foreign/second language learning; Cantonese proficiency

Introduction

The past two decades have witnessed a growing number of children who speak a language in addition to English at home as well as English-speaking children who are learning a second

language in the U.S. Many of these children attend dual language immersion programs, which integrate non-heritage speakers with heritage speakers of the partner language¹. Dual language programs provide opportunities for heritage speakers to maintain and enhance their literacy skills, overall proficiency in the heritage language and knowledge of the culture, and, at the same time, provide opportunities for English speakers to develop proficiency in another language (Christian, 1996, 2011) as well as become more interculturally-competent. Dual language immersion education also integrates the partner language into the general educational curriculum with the goal of developing children's bilingual and biliteracy skills and cross-cultural competence and promoting academic achievement (Christian, 1996, 2011).

While previous research has demonstrated the positive impact of dual immersion program on students' proficiency in both languages as well as on their academic achievement (e.g., Babino, 2017; Howard, Christian, & Genesee, 2004; Lindholm-Leary & Block, 2010; Lindholm-Leary & Genesee, 2014; Marian, Shook, & Schroeder, 2013; Steel et al., 2017), fewer studies have examined students' attitudes toward attending such programs. Several empirical studies have consistently shown that students' attitudes-related variables are strongly associated with students' second/foreign language achievement (Donato, Tucker, Wudthayagorn, Igarashi, 2000; Gardner, 1985; Gardner, Tremblay, & Masgoret, 1997; Mori & Calder, 2015), yet the majority of past studies documenting the positive role of students' attitudes in their second language (L2) achievement were conducted in non-dual immersion programs in the U.S. (Donato et al., 2000 [Japanese foreign language program]; Mori & Calder, 2015 [Japanese heritage school]). In their review of existing research on students' attitudes in dual immersion programs, Feinauer and Howard (2014) pointed out that students' attitudes represent one important aspect of the cultural goals in dual immersion program and that practitioners and researchers need to address cultural goals together with academic and linguistics outcomes.

Moreover, the growing population of Chinese-speaking children (U.S. Census Bureau, 2015) has also led to an increasing number of Chinese dual immersion programs in the U.S (Center for Applied Linguistics, 2011). Despite this, very few studies, with the exception of Lindholm-Leary (2011), have examined Cantonese dual immersion programs in the U.S. This is somewhat perplexing, since Cantonese-English bilingual education has been taking place in the U.S. since the 1900s with the arrival of the first wave of Chinese immigrants, although it was not framed through the lens of dual language immersion; it was also parents of Cantonese-speaking students who advocated for the right to linguistically appropriate accommodations in the 1974 *Lau v. Nichols* civil rights court case. Thus, the relevance of Cantonese to the U.S. context cannot be understated. Furthermore, because Chinese has been classified as an exceptionally difficult world language to learn (Xu et al., 2015), studies of the acquisition of Chinese language and literacy by children living outside of China are

¹Informed by Burkhauser and her colleague (2016)'s study, we used the phrase "partner language" to define non-English language in this study. According to Burkhauser et al (2016), partner language was used "because it does not imply that either English or the non-English language is the 'target' or 'second' language. Rather, the aim is for students, regardless of their native language, to become bilingual and biliterate. This is achieved through teaching that encompasses both English and a classroom partner language, which is the first language for some students (especially those in two-way programs) and the second or third language for others" (Burkhauser et al., 2016, p.429).

needed, particularly since it may take these children more time to become literate in Chinese than in other languages, such as Spanish.

To address these gaps in the literature, this study examines students' Cantonese proficiency, students' attitudes, and the relationship between students' attitudes and Cantonese proficiency in a Cantonese dual immersion school. As heritage language status and gender differences have shown effects on attitudes in language proficiency (Bearse & de Jong, 2008; de Jong & Bearse, 2011; Lindholm-Leary, 2016; Sung & Padilla, 1998), this study further examined the influence of these two background variables on students' attitudes and proficiency.

Literature Review

Students' Partner Language Proficiency in Immersion Programs

Prior research has provided evidence that Spanish immersion students (Burkhauser et al., 2016; Lindholm-Leary & Ferrante, 2005; Lindholm-Leary & Hernández, 2011; Lindholm-Leary & Howard, 2008; Lindholm-Leary & Hernández, 2011) as well as Chinese immersion students (Lindholm-Leary, 2011; Padilla, Fan, Xu & Silva, 2013; Xu, Padilla & Silva, 2015) made progress over time in their partner language and achieved desirable levels of partner language proficiency. These studies made use of a variety of methods to measure students' partner language proficiency, including students' self-rated language proficiency (Lindholm-Leary & Ferrante, 2005; Lindholm-Leary & Hernández, 2011) and a combination of district-developed language measures and self-ratings of proficiency (e.g., Lindholm-Leary, 2011). More recent studies (Burkhauser et al., 2016; Padilla et al., 2013; Xu et al., 2015) used Avant STAMP 4Se (STANDards-based Measurement of Proficiency-4 Skills Elementary)-a standardized language assessment to measure students' partner language proficiency.

Burkhauser and colleagues (2016) focused on 1,284 Grade 3 to Grade 8 students in Spanish, Japanese and Mandarin Chinese immersion programs in public schools in Portland. The majority of the students in their study spoke English as their home language. Using STAMP 4S as the assessment tool, they found that, by the end of Grades 4 and 5, Mandarin Chinese immersion students performed better in Chinese listening (scoring Intermediate-Midⁱⁱ) than in Chinese reading and speaking (scoring at the Intermediate Low level) and that heritage speakers of Chinese performed similarly to non-heritage speakers of Chinese (Burkhauser et al., 2016). However, for Spanish dual immersion students, heritage speakers of Spanish outperformed non-heritage speakers in listening and writing but achieved similar proficiency levels as non-heritage speakers in reading and speaking (Burkhauser et al., 2016).

While Burkhauser et al. (2016) compared immersion programs with different partner languages, other researchers focused only on Mandarin dual immersion programs (Padilla et al., 2013; Xu et al., 2015). Specifically, Xu and colleagues (2015) recruited 48 Grade 4 and Grade 5 students (20 heritage speakers and 28 non-heritage speakers) from a high performing school district in Northern California. STAMP 4Se was used to assess the

ⁱⁱThe STAMP literature states that STAMP levels are "related to" (Avant assessment, n. d. a) and "defined by" (Avant assessment, n. d. b) the proficiency levels and sub-levels that are described in the ACTFL Proficiency Guidelines (e.g., Novice High, Intermediate Mid). Some STAMP results are reported using those designations; however, they are not equivalent to official ACTFL ratings.

students' reading, writing and speaking skills. They found that, by the end of Grade 5, over 60% of the Mandarin dual immersion students achieved at least Intermediate Low in reading, writing and speaking. In addition, they did not find any significant differences in the three language skills between heritage and non-heritage speakers.

Padilla and colleagues (2013) also administered the STAMP 4Se to 14 fifth graders in the same school. Notably, similar to Burkhauser and colleagues (2016), the authors found that the students in Grade 5 performed the best on the listening subtest. Specifically, 57% of the students in Grade 5 achieved at the Intermediate High level in listening, whereas only 20% of them achieved at this level in reading and speaking. No participants achieved at an Intermediate High level in writing. In addition, a majority (71%) of the Grade 5 students scored at the Intermediate Low level in writing and more than half (62%) of them scored at the Intermediate Low level in speaking. The students in Grade 5 were evenly distributed between the Novice High through Intermediate High levels in reading. They also compared heritage speakers with non-heritage speakers in their Mandarin proficiency using a researcher-developed Mandarin proficiency assessment and found that heritage speakers showed an advantage in oral language and reading skills in kindergarten through Grade 3 but that the early advantage disappeared when they entered Grades 4 and 5.

As mentioned earlier, studies on Cantonese dual immersion are scarce. Lindholm-Leary (2011) examined two Chinese dual immersion programs (a Cantonese program and a Mandarin program) in California. This study did not distinguish between the two Chinese programs but used the term *Chinese dual immersion program* to describe them both. This study found that, in the two programs, native Chinese speakers, Chinese-English bilinguals and native English speakers made significant gains in their reading, listening, speaking and writing skills, yet overall native speakers of Chinese obtained higher teacher ratings of their Chinese proficiency compared to those of native English speakers. While this is useful in looking at the gains of "Chinese" dual language immersion as a whole, it is important to consider that Cantonese and Mandarin are two different Chinese languages with different grammars, lexicon, tone inventories, as well as sociolinguistic milieux.

Attitudes Towards Partner Language

Prior studies have documented that dual immersion school students hold positive attitudes toward learning the partner language. Specifically, previous studies found that students enjoyed learning the partner language (Bearse & de Jong, 2008; Cazabon, Nicoladis & Lambert, 1998; de Jong & Bearse, 2011; Lindholm-Leary, 2016) and thought it was important to learn the partner language (Bearse & de Jong, 2008; Lindholm-Leary, 2016; Potowski, 2007). These studies focused on students who were enrolled in Spanish dual immersion programs ranging from upper elementary to middle school grades (Cazabon, Nicoladis & Lambert, 1998; Lindholm-Leary, 2016; Potowski, 2007) or middle to high school grades (Bearse & de Jong, 2008; de Jong & Bearse, 2011).

Drawing on survey data, the above studies also found that heritage speakers of the partner language tended to hold more positive attitudes toward learning the partner language (Bearse & de Jong, 2008; de Jong & Bearse, 2011; Lindholm-Leary, 2016). Focus group interview data showed that both English native speakers and heritage speakers of the partner language

believed that learning the partner language was important because it would help them get a better job in the future (Bearse & de Jong, 2008; de Jong & Bearse, 2011). Heritage speakers of the partner language also reported learning the partner language was important because it allowed them to communicate and connect with family members (Bearse & de Jong, 2008; de Jong & Bearse, 2011; Lindholm-Leary, 2016; Potowski, 2007).

Interview data produced similar findings in a recent study on a private immersion school with French and Spanish as the partner languages (Hellmich, 2018). In that study, a heritage speaker of Spanish expressed that learning Spanish was important to her because Spanish skills will be helpful for future careers and both heritage speakers and non-heritage speakers in the study mentioned that learning the partner language is useful when they travel to other countries. The author suggested that the trips organized by the school may result in the association between travel and partner language learning.

In terms of gender difference in attitudes towards language learning, previous literature on general education has shown that girls were more motivated in reading and language arts than boys (e.g., Meece, Glienke, & Burg, 2006). Similar results were found in foreign language education: girls tended to demonstrate higher intrinsic motivation as well as greater interest in the foreign countries and cultures than boys (Carreira, 2011; Henry, 2009). Other research also found that girls showed higher engagement than boys in the foreign language classroom (e.g., Oga-Baldwin & Nakata, 2017).

To date, few studies examined gender differences regarding students' attitudes toward learning the partner language in dual immersion program (Lindholm-Leary, 2016). Sung and Padilla (1998) found that female students in elementary and secondary schools had a significantly higher component score on the "personal interests-related motivation" (p. 210) subscale than male students, indicating that female students were significantly more interested in learning Asian languages. More research is needed to examine whether male and female students differ in their attitudes toward the partner language so as to inform instructional practices in dual immersion programs. For instance, if girls are found to be more motivated than boys in learning the partner language, then dual immersion teachers should consider gender differences when selecting teaching materials and designing in-class activities so as to provide equal learning opportunities for all students.

Attitudes Toward Dual Immersion Programs

Previous studies also reported that students held positive attitudes toward dual immersion programs (Bearse & de Jong, 2008; Cazabon, Nicoladis & Lambert, 1998; Lee & Jeong, 2013; Lindholm-Leary & Borsato, 2001; Lindholm-Leary, 2011). While most studies examined Spanish dual immersion programs (Bearse & de Jong, 2008; Cazabon, Nicoladis & Lambert, 1998; Lindholm-Leary & Borsato, 2001), studies also examined other dual immersion programs, such as Korean (Lee & Jeong, 2013) and Chinese (Lindholm-Leary, 2011).

Cazabon and colleagues (1998) interviewed two 13-year old Spanish-heritage speakers who had been enrolled in the Spanish dual immersion program since Grade 2. The students expressed positive attitudes toward the teachers in the dual immersion program. Similarly,

Lee and Jeong (2013) conducted semi-structured interviews with first grade Korean-heritage children who had been enrolled in the program since kindergarten. The first grade children in the interview described their experiences in the Korean-English dual immersion program as “fun and interesting” (Lee & Jeong, 2013, p.95). However, their interviews consisted of only heritage speakers of the partner language and did not compare students’ attitudes towards the program by heritage language subgroups.

Other survey-based studies have found that both Spanish heritage speaking and native English-speaking students who had participated in secondary dual immersion programs enjoyed their experiences and were glad that they participated in the program (Bearse & de Jong, 2008; Lindholm-Leary & Borsato, 2001). Specifically, survey results showed that over 80% of the students agreed or strongly agreed that they liked the dual immersion program (Bearse & de Jong, 2008). In addition, Lindholm-Leary and Borsato (2001) also found that significantly more heritage Spanish speakers were glad to be in the program compared to native English speakers.

In a more recent study, Lindholm-Leary (2011) recruited students from Grade 5 to Grade 8 in a Cantonese dual immersion program and a Mandarin dual immersion program. The author examined the students’ attitudes towards the two programs using a self-developed survey. The authors found that 81% of the participants in the study were glad that they were in the Chinese program. However, this study did not conduct a separate analysis by heritage language subgroups.

Overall, the majority of students in dual immersion programs, regardless of their language status, reported positive attitudes toward dual immersion programs. However, most of the studies did not conduct subgroup analyses by home language or by gender.

Student Attitudes and Language Proficiency

Previous studies have examined the relation between student attitudes and partner language proficiency (e.g., Gardner, 1985; Masgoret & Gardner, 2003; Mori & Calder, 2015); however, they have been conducted with students in non-dual immersion programs. Gardner and his colleagues (Gardner, 1985; Masgoret & Gardner, 2003) found positive associations between attitudes towards learning a second language and language proficiency among English-French bilingual students attending non-dual immersion programs in Canada. Such positive correlations were consistent among students from different educational levels, including elementary, secondary, and university (Masgoret & Gardner, 2003).

In terms of studies in the US, only a few have examined the relationship between student attitudes and language proficiency, all in non-dual language immersion programs. Mori and Calder (2015) examined the relationship between attitudes, motivation and vocabulary knowledge among 116 high school Japanese heritage students who attended Japanese supplementary academic schools. The authors found that Japanese heritage students’ positive attitudes toward the people who speak the language and the culture were positively related to their English vocabulary scores. They further suggested that positive attitudes toward the language and culture played a positive role in teenage students’ bilingual proficiency.

Donato and colleagues (2000) also investigated students' attitudes and language achievement in a Japanese foreign language learning program in an elementary school. Grade 4 and Grade 5 students' attitudes toward learning Japanese were measured by survey items such as "learning Japanese is fun" (p.383) and "Japanese is an important part of the school program" (p.383) in their study. They found a positive, moderate correlation between students' attitudes toward learning Japanese and their self-rated Japanese skills. Their study indicated that students who held more positive attitudes toward learning Japanese obtained higher self-rated Japanese skills in this particular foreign language program in the United States. However, the extent to which students' attitudes are related to their language proficiency remains unexamined for children attending dual immersion schools.

To summarize, despite the growing literature examining Spanish and Mandarin dual immersion students' partner language proficiency and attitudes, similar studies on Cantonese dual immersion students are very limited. In addition, previous dual immersion program research has not examined the relationship between proficiency and attitudes, although research on second language acquisition consistently has shown a positive relationship between attitudes and proficiency.

Framed by this previous work and in light of the lack of research on the relationship between student attitudes and language proficiency in dual language immersion programs in general, and particularly in Cantonese dual immersion programs, this study investigated the following questions:

1. What levels of Cantonese proficiency do 4th and 5th grade students in a Cantonese dual immersion school achieve in reading, listening, speaking, and writing?
2. What are the underlying components of students' attitudes in the dual immersion school?
3. To what extent are gender and/or heritage-language status related to students' attitudes?
4. To what extent do students' attitudes predict their Cantonese proficiency?

Methods

Participants

The study was conducted in a Cantonese-English dual-immersion public school that was located in Northern California and enrolled 405 students in kindergarten through Grade 5. Once administrative permission was granted, the parents of 35 fourth graders (58.3%) and twenty-five fifth graders (41.7%) agreed to allow their children to participate in the study. There were 29 boys and 31 girls. The majority (88.3%) had attended the focal school since kindergarten and were Chinese Americans (72%; 43 students), followed by students of non-Asian background (n=10), and other Asian backgrounds (n=7). 44 participants (73.3%) were classified as Cantonese heritage learners, defined as those whose parents, grandparents or relatives speak Cantonese, based on self-reported identity data. The remaining 16 participants (26.7%) did not identify themselves as Cantonese heritage language learners and

were classified as non-heritage learners. Students' self-reported use of English and Cantonese and their level of comfort using Cantonese are shown in Table 1.

Measures and Procedures

Cantonese Proficiency.—Students' Cantonese proficiency in interpretive reading, interpretive listening, presentational writing and presentational speaking was measured by a standardized online district administered assessment, Avant STAMP 4Se (STAndards-based Measurement of Proficiency-4 Skills Elementary). This assessment has been used in previous studies (Burkhauser et al., 2016; Fortune & Song, 2016; Fortune & Zhang-Gorke, 2014; Padilla et al., 2013; Xu et al., 2015). Since all students in the focal school were assessed at the end of the year, data for the participants in this study were pulled from the total-school data set.

Student Attitudes.—The survey and focus group interview methods were used to assess students' attitudes, as in previous studies (Bearse & de Jong, 2008; Hellmich, 2018; Lindholm-Leary, 2016). Eight background questions adapted from Lindholm-Leary (2011) were used to elicit the demographic information reported above. The eight additional survey questions were adapted from Lindholm-Leary's studies that investigated students' attitudes in Spanish and Chinese dual immersion programs (2011, 2016). For each item, the participants were asked to rate their level of agreement with each statement on a four-point Likert scale (1=strongly disagree, 2=disagree, 3=agree, 4=strong agree). In May, near the end of the academic year, students accessed and completed the online survey using school computers in the computer lab during school hours proctored by a teacher and a research assistant.

To obtain a comprehensive understanding of students' attitudes towards the dual immersion program, focus group sessions were conducted at the end of the school year by two trained English-Cantonese bilingual research assistants who had been volunteering at the focal school during the academic year. To ensure a variety of perspectives, the 12 students were selected based on their home language background (heritage learner vs non-heritage learner), grade (Grade 4 vs. Grade 5), and gender (female vs. male). The two separate focus group sessions each included six children, as recommended by Merriam (2009), lasted one hour and were held during lunch time during the school day.

The four focus group questions were adapted from Lee and Jeong's (2013) study with Korean-English DLI students: 1) Do you want to be bilingual? Why? What do your parents think about being bilingual?; 2) Do you think you should know how to read and write in Chinese (Cantonese), or is just knowing how to speak it enough?; 3) How are you doing in school? What is easy? What is hard? What do you like about your school? What do you not like about your school?; and 4) Name your three favorite and three least favorite activities you do in Chinese (Cantonese), in English, or in both languages.

Data Preparation

A series of one-way ANOVAs were conducted to determine if there were patterns in the missing or non-ratable scores (one writing score - 1.7%; three reading scores-5.0% and

seven speaking scores –11.7%). Occasional key background data were also missing from students' responses. Because analyses showed no systematic patterns in the missing data, pairwise deletion was used to address the missing data in regression analyses. Then, distribution properties of the four Cantonese proficiency variables were examined through descriptive statistics and visual inspection of histograms. Skewness and kurtosis statistics were all within the range of –2 to 2, thus normality of the data could be assumed.

Data Analysis

Proficiency.—As in previous studies (Burkhauser et al., 2016; Xu et al., 2015), student's reading and listening proficiency levels and sublevels were scored using numbers ranging from 1 to 6. Sublevels 1–3 reflect Novice Low, Mid, and High. Sublevels 4–6 represent Intermediate Low to Intermediate High. Students' writing and speaking proficiency levels and sublevels were scored using numbers ranging from 1–7. Sublevels 1–3 reflect Novice Low to High. Sublevels 4–6 represent Intermediate Low to Intermediate High. Sublevel 7 represents Advanced Low. The percentage of students in each performance level as well as means and standard deviations for each language skill by heritage language status and gender were calculated.

Attitudes.—Principal components analysis (PCA) was used to determine the number of components underlying students' attitudes. PCA is a statistical technique to “generate coherent subsets that are relatively independent of one another” (Tabachnick & Fidell, 2007; p. 607) and was conducted to “reduce a set of variables into a smaller set of dimensions” (Field, 2013, p. 667).

Demographic variables.—Students' grade, gender and heritage status were coded as dummy variables: grade 4=0, grade 5=1; female=0, male=1; non-heritage learners=0, heritage learners=1. A two-way analysis of variance (ANOVAs) by gender and heritage language status on the extracted components (i.e. component scores) were conducted to examine whether students' attitudes differ by gender and heritage language status.

To investigate the influence of students' background variables and attitudes on proficiency, hierarchical multiple regression analyses were conducted. Grade level, gender, heritage language status were entered in the first three steps as control variables to account for the influence they would have on students' Cantonese proficiency. The key predictors (i.e. student attitudes variables) were entered in the later steps. Component scores of students' attitudes were used in regression analyses.

Focus group interviews.—The focus group interviews were first transcribed and verified by trained research assistants on the research team, then members of the research team read through the transcripts. They conducted open coding, wrote memos and engaged in discussion, as more focused coded began to emerge (Emerson, Fretz, & Shaw, 1995). In the initial rounds of open coding, the research team noted the students' reasons for learning Cantonese and their perceptions about their schooling experiences at the focal school. Prominent codes identified in the transcripts included “communicating across generations,” “us versus them,” “respecting culture,” and “economy of language.” For each code, three

members of the research team, two of them being heritage Cantonese speakers themselves, went through multiple discussions to establish trustworthiness of the interpretations. Only the focus groups comments that are relevant to the research questions are reported.

Results

Language Development

Data from the STAMP assessments were used to answer the first research question -- *What levels of Cantonese proficiency do 4th and 5th grade students in the Cantonese dual immersion school achieve in reading, listening, speaking, and writing, results?* Table 2 summarizes the percentage of students at each performance level as well as mean and standard deviations for each language skill for the whole group and by heritage language status and gender. On average, students scored at the Novice Mid to Novice High levels in reading. They scored at the Novice High level in writing and speaking. In terms of listening performance, on average, they scored at Intermediate Mid to Intermediate High.

Beliefs and Attitudes

Data from the survey questions and the focus group interview sessions were examined in order to answer the second research question -- *What are the underlying components of students' attitudes in the dual immersion school?*

Components of Students' Attitudes.—The eight survey questions concerning students' attitudes were used for principal components analysis. Scree plot and the Kaiser–Guttman rule criteria of eigenvalues greater than 1 were used to determine the number of components (Field, 2013; Tabachnick & Fidell, 2007). Both scree plot and Kaiser criteria suggested two interpretable components. After deciding the number of components to retain, PCA with varimax rotation was completed. “Since loading indicates the degree of the contribution of the item to the component” (Mori & Calder, 2015, p.737), only items with loadings of .40 or greater on one component and less than .30 on other components were retained (McCoach et al., 2013). As a result, two cross-loadings items were removed and six items were retained. The first component concerns attitudes towards learning Cantonese ($\alpha = .74$). The second component concerns attitudes towards the focal school ($\alpha = .65$). Table 3 shows the rotated component matrix for the six items as well as the item descriptions.

Quantitative findings on learning Cantonese.—Descriptive analyses on the survey items regarding students' attitudes demonstrated that majority of the students (86.7%) agreed or strongly agreed that learning Cantonese was important. For heritage learners, 90.9% ($n=40$) indicated that learning Cantonese was important to them. For non-heritage learners, 75% ($n=12$) agreed or strongly agreed that learning Cantonese was important.

Additionally, 71.7% of the participants agreed or strongly agreed that they tried to find opportunities to use Cantonese outside of school. For heritage learners, 77.3% ($n=34$) agreed or strongly agreed that they tried to find opportunities to use Cantonese outside of school. For non-heritage learners, 56.3% ($n=9$) agreed that they tried to find opportunities to use Cantonese outside of school.

However, only 46.7% of the students (n=28) agreed or strongly agreed that they would use Cantonese skills in their future jobs. For heritage learners, 52.2% (n=23) agreed or strongly agreed that they would use Cantonese skills in their future jobs. For non-heritage learners, 31.3% (n=5) agreed or strongly agreed that they would use Cantonese skills in their future jobs.

Qualitative findings on learning Cantonese.—Consistent with the quantitative data, both heritage learners and non-heritage learners in the focus groups demonstrate positive attitudes towards learning Cantonese.

For heritage learners, heritage language maintenance, communication with family members and non-English speakers appear to be the main reasons to learn Cantonese. Jason, a Chinese American and self-reported native Cantonese speaker and a Cantonese-English bilingual, mentioned the importance of learning Cantonese so that he can communicate with his family, *saying: "...and also my mom speaks English and Chinese [Cantonese] but my grandparents speak a lot of Chinese [Cantonese]."* Cynthia, a Chinese-American and self-reported Cantonese heritage learner, a Cantonese-English bilingual and a native English speaker stated that by learning Cantonese she could communicate with non-English speakers when she travels: *"I agree with Melissa and Leslie, because in different places, you can talk to other people in different languages. If they don't understand your language, you can just use their language to communicate."* James, a Chinese American who self-identified as a native Cantonese speaker, a Cantonese heritage learner and a Cantonese-English bilingual focused on the importance of heritage language maintenance, in particular of "respecting" and trying to understand his family's culture and history: *"... I want to go to a bilingual school, because my dad - he wanted to keep moving on to Chinese[Cantonese] ... and again, I want to respect his culture..."* He further added: *"For the New Year's, this year, my dad wanted to read this ... one of the legendary books 西遊記 [Journey to the West]. And then ... I wanted to read it..."*

On the other hand, non-heritage learners expressed their interests in learning Cantonese. When asked about their favorite activities in Chinese (Cantonese), Ashely, a non-Asian who self-reported as a native English speaker commented that one of her favorite activities is *"reading Chinese[Cantonese] books [that are in the classroom]"*. Xever, a non-Asian American, and a self-reported native English speaker stated that one of his favorite activities was *"speaking the language."* He further adds that he enjoys *"talking to my friend [in Cantonese]"*.

Some non-heritage learners in the focus groups also mentioned job benefits associated with learning Cantonese. Lena, for example, a non-Chinese Asian and self-reported native English speaker stated, *"I agree with Steven because, like, that can also help you, like, with jobs and, like, if there's different customers that speak different languages, it can help."*

Ashely, a non-Asian who self-reported as a native English speaker also said, *"I agree with Emily because my parents always say that, like, you can speak Spanish, you can speak Chinese [Cantonese] and English, that you can get a really, really good job."* It appears that their perception of the job benefits may be coming from their parents, not from themselves,

suggesting that young language learners may not have fully internalized the instrumental, job-related value of learning a partner language.

Interestingly, both heritage and non-heritage learners acknowledged the importance of not only being able to speak Cantonese but also to be able to read Chinese (Cantonese). The frequently mentioned benefits included ordering food at restaurants and understanding signs when travelling. James, a Chinese American and self-identified native Cantonese speaker, a Cantonese heritage learner and Cantonese-English bilingual stated,

“because ... I know that there’s a lot of restaurants, and you have to learn a lot of ... you should learn ... you should learn words ... and you have to learn all of them because ... at a restaurant, they might have to speak up with waiters to get your order ... and you have to read ... you have to read to find out what kind of order you actually want.”

Emily, a non-Chinese Asian and self-reported Cantonese-English bilingual and native English speaker added,

“I think you should be able to read and write it because if you were in China and you don’t.. and if you like - you’re at a restaurant then you you’re looking at a menu [students giggle] sometimes there’s like no English translations, and then you’re not gonna know even though you know how to speak Chinese [Cantonese].”

Lena, a non-Chinese Asian and self-reported native English speaker expressed the importance of being able to read road signs in a different language when travel: “...like, if you wanna...if it says oh “this road goes to this way”, and you don’t know how to read, you could go to a different place.” Similarly, Nate, a Chinese-American and self-reported Cantonese heritage learner also commented that, when travelling to China, it is important to be able to read Chinese signs: “Like...if you are in China...you’re supposed to meet someone...at a restaurant...or somewhere...you have to find...the Chinese place.” From the focus group interviews it appears that even from a young age, learners understand and emphasize the importance of becoming literate in Chinese (Cantonese) in order to be able to function in China. Although their reasons to learn to read Chinese (Cantonese) are more practical than academic or professional, eventually such positive, instrumental reasons for language study may lead them to consider future career opportunities.

Quantitative findings on attitudes toward the focal school.—Overall, quantitative findings demonstrated that majority of the students held positive attitudes towards the focal school. 91.7% of the students (n=55) reported that they were happy to attend the focal school. For heritage learners, 93.2% (n=41) agreed or strongly agree that they were glad to attend the focal school. For non-heritage learners, 87.5% (n=14) agreed or strongly agree that they were glad to attend the focal school.

In addition, 80% of the students (n=48) agreed or strongly agreed that being in the dual immersion school had given them a greater appreciation for other languages. For heritage learners, 79.5% (n=35) agreed or strongly agree that being in the dual immersion school had given them a greater appreciation for other languages. For non-heritage learners, 81.3%

(n=13) agreed or strongly agree that being in the dual immersion school had given them a greater appreciation for other languages.

Lastly, 86.7% of the students (n=52) agreed or strongly agreed that the focal school respected their background and culture. For heritage learners, 86.4% (n=38) agreed or strongly agree that the focal school respected their background and culture. For non-heritage learners, 87.5% (n=14) agreed or strongly agree that the focal school respected their background and culture.

Qualitative findings on attitudes towards the focal school.—Consistent with the quantitative findings, multiple students in the focus group expressed positive attitudes toward the focal school, noting that they particularly appreciated the passion and effort the focal school principal and teachersⁱⁱⁱ put in their teaching and school activities. For example, Harry, a Chinese American and self-reported Cantonese-English bilingual commented, *‘The teachers are always prepared for class.’* Xever, a non-Asian American, and a self-reported native English speaker added, *“It has a good principal.”*

Some students also mentioned that they liked activities in the focal school. The school implemented a STEAM program^{iv} that integrates science, technology, engineering, math and arts with everyday learning and aimed to foster students’ communication skills, collaboration, critical thinking and creativity skills. As part of this program, children went on engaging field trips. A fifth-grade girl commented, *‘Like we get to go on field trips and they get the good teachers that are nice.’*

Concerning the STEAM program, another fourth-grade boy added:

“What I like about this school is like ... how they ... how like ... how they like have murals ...and stuff like that ... and ... all the activities you get to do, like ... STEAM (Science, Technology, Engineering, Art and Math) and ... there are really cool field trips.”

Group Differences

To examine the third research question-- To *what extent are gender and/or heritage-language status related to students’ attitudes?*-- two-way ANOVAs by gender and heritage language status were conducted on the two dependent variables (attitudes toward learning Cantonese and toward the focal school). These component scores were derived from the survey items. A two-way ANOVA by gender and heritage language status on attitudes toward learning Cantonese revealed a significant main effect for heritage language status, $F(1, 56) = 9.05$, $p = .004$. On average, heritage learners indicated significantly stronger positive attitudes toward learning Cantonese compared with non-heritage learners. No significant influence of

ⁱⁱⁱMost Grade 4 and Grade 5 teachers and school administrators in the focal school have obtained a master’s degree and have gained rich teaching knowledge and experiences before coming to the focal school. In addition, the majority of teachers are also Cantonese-English bilinguals themselves. They have native language skills in both languages and are familiar with both American and Chinese cultures.

^{iv}In the STEAM program, teachers created authentic and engaging learning experiences for students. Students used technology-based learning tools that made use of pictures, sounds and animations. Furthermore, students had the opportunity to work collaboratively with their peers to solve problems in the STEAM activities. They also had multiple opportunities to express and develop their creative ideas in these STEAM activities.

gender was found, $F(1, 56) = 2.13$, $p = .24$, nor was there a significant interaction between gender and heritage language status, $F(1, 56) = .23$, $p = .63$. Similarly, there was no significant influence of gender on attitudes toward the focal school $F(1, 56) = .82$, $p = .37$, or heritage language status effect, $F(1, 56) = .005$, $p = .94$, and no significant interaction between gender and heritage language status, $F(1, 56) = 1.02$, $p = .32$.

Predictive Relations Between Attitudes and Cantonese Proficiency

To examine the final research question—*To what extent do students' attitudes predict their Cantonese proficiency?*-- a hierarchical multiple regression analyses was conducted. Table 4 shows the results of regression analyses in which Cantonese reading, writing, listening or speaking was predicted by grade level, gender, heritage language status and students' attitudes. In all the hierarchical multiple regression analyses, grade level (Grade 4 coded as 0, and Grade 5 coded as 1), was first entered in the model (Step 1). Then, gender (female coded as 0, male coded as 1) was entered in step 2. Heritage language status (non-heritage learners coded as 0, heritage learners coded as 1) was entered in step 3. The component score of students' attitudes toward learning Cantonese was entered in the next step (step 4a). The component score of students' attitudes toward the focal school was entered in the last step (step 4b).

Reading skills.—Grade level explained 6% of the variance in Cantonese reading scores. Although grade level was not significant, it was kept in the model to control for grade level difference. Gender accounted for an additional 16% of the variance in the model. Heritage language status explained an additional 9% of the variance in the model after grade level and gender had been taken into consideration. The component score of students' attitudes toward learning Cantonese was entered in Step 4a. Students' attitude toward learning Cantonese was not significant. Therefore, it was removed from the model. Then, the component score of students' attitudes toward the focal school was entered in model 4b and it was significant. Thus, model 4b was chosen as the final model. The full model explained 40% of the variance in Cantonese reading scores, $F(4, 52) = 8.69$, $p < .001$. After controlling for students' grade level, gender, heritage language status, students' attitudes toward the focal school accounted for an additional 9% of the variance in Cantonese reading scores.

Writing Skills.—As indicated in Table 4, controlling for grade level, only gender showed significant association with Cantonese writing scores ($p = .03$), accounting for an additional 8% of the variance in Cantonese writing scores. Students' attitudes were not related to students' writing scores.

Listening Skills.—The full model explained 41% of the variance in Cantonese listening scores, $F(4, 55) = 8.41$, $p < .001$. Notably, after controlling for grade level and gender, heritage language status explained an additional 26% of the variance in Cantonese listening scores. After controlling for all the background variables, students' attitudes toward the focal school explained an addition 7% of the variance in Cantonese listening scores.

Speaking Skills.—The full model (model 4b) explained 34% of the variance in Cantonese speaking scores, $F(4, 48) = 4.78$, $p = .002$. After controlling for grade level, gender

accounted for an additional 15% of the variance in Cantonese speaking scores. Importantly, after controlling for all the background variables, students' attitudes toward the focal school explained an addition 10% of the variance in Cantonese speaking scores.

Overall, the findings from the regression analyses demonstrated that, on average, girls tended to perform better than boys on Cantonese reading, writing and speaking tests. Heritage learners outperformed non-heritage learners on Cantonese reading and listening tests. Moreover, students who held more positive attitudes toward the focal school tended to perform better on Cantonese reading, listening and speaking tests after controlling for their grade level, gender and heritage language status. However, students' attitudes toward the focal school were not associated with their Cantonese writing skills. In addition, students' attitudes toward the partner language failed to explain the variance in students' Cantonese language skills.

Discussion and Implications

Concerning language proficiency, students performed the best in listening, corroborating previous studies on Mandarin dual immersion students (Burkhauser et al., 2016; Padilla et al., 2013). The finding that, on average, females performed better than males on Cantonese reading, writing and speaking tests aligns with prior studies (Lindholm-Leary & Howard, 2008; Sung & Padilla, 1998). Not surprisingly, heritage learners outperformed non-heritage learners on reading and listening, as found in Burkhauser and colleagues' (2016) study of Spanish dual immersion students.

Concerning Cantonese dual immersion students' attitudes, overall, 1) students held positive attitudes toward the Cantonese dual immersion school, as shown in prior studies (Cazabon et al., 1998; Lee & Jeong, 2013; Lindholm-Leary & Borsato, 2001; Lindholm-Leary, 2011); and 2) the quantitative data revealed that heritage learners of Cantonese held more positive attitudes toward learning Cantonese, which also supports previous work (Bearse & de Jong, 2008; de Jong & Bearse, 2011; Lindholm-Leary, 2016). The qualitative data revealed that both heritage learners and non-heritage learners realized that being able to read Chinese (Cantonese) is important. In addition, heritage learners expressed family and heritage language maintenance as the main reasons to learn Cantonese, whereas non-heritage learners perceived future job opportunities as a benefit of learning Cantonese. Although Sung and Padilla (1998) found that females held more positive attitudes than males towards the partner language, the current study did not find such difference. This might due to differences in the survey items that were used to measure attitudes toward the partner language. The qualitative data also suggested that students who enjoyed studying in the focal school particularly liked their teachers, the teachers' choice of instructional practices, the school principal, and school activities, especially the STEAM focus. These findings confirm work by Lindholm-Leary (2001), who documented that a positive school environment, supportive principals, and high-quality teachers are crucial to the success of dual language education programs and that a positive school environment made students feel proud of their schools and participate in extra-curricular activities (Lindholm-Leary; 2001).

Concerning the association between attitudes and proficiency, both heritage and non-heritage learners who held more positive attitudes toward the focal school tended to obtain higher scores in Cantonese reading, listening and speaking skills, highlighting the importance of cultivating students' positive school attitudes. However, their attitudes toward the focal school did not explain the variance in their writing skills. This may be due to the Cantonese curriculum and instructional focus in the focal school, which focused less on writing than on the other skills. Contrary to Mori and Calder's findings (2015) on Japanese high school heritage learners in the U.S., in the current study, upper elementary school students' attitudes towards Cantonese learning failed to explain the variance of their Cantonese proficiency. This might be due to the age of the participants in this study (9 to 11 year olds), to differences in the approach to measuring learners' attitudes toward learning Cantonese that was used, and the small sample size.

Given the impact of a positive school and learning environment on dual language learners' proficiency, dual language program administrators and teachers must work together to help students develop interest in the partner language and focus on instructional strategies that promote language proficiency for both heritage and non-heritage learners, that focus on age-appropriate and culturally-related topics and activities, and that engage learners in meaningful content-based (STEAM) topics and field trips. In addition, engaging parents, many of whom may speak the partner language, offers an important means of enriching the curriculum and overall learning experience. Although some students mentioned possible job-related benefits of being bilingual during the focus group interviews, about 53% of the students in the survey perceived that competence in Cantonese was not a career asset. This finding indicates that more effort in dual immersion and world language programs needs to be made to connect language learning to different career pathways as well as personal activities and goals.

While the current study of largely confirmed previous findings and extended them to the Cantonese dual immersion setting, the small sample size and larger number of heritage than non-heritage learners should be considered when interpreting the results. In addition, a larger number of items could be used to measure students' attitudes toward learning Cantonese and the focal school. Investigating parents', teachers', and administrators' attitudes towards the dual immersion education would also add an important perspective. Future studies could adopt a longitudinal design or investigate reciprocal relationships between students' attitudes and their language proficiency.

Conclusion

The current study is the first to examine students' attitudes and language proficiency in a Cantonese dual immersion school in the U.S. This study found that students' attitudes toward the focal school explained significant variance in three of the four Cantonese skills (reading, listening, and speaking) for both heritage and non-heritage learners, suggesting the importance of the overall school environment.

Appendix.: Tables

Table 1.

Characteristics of participants, participants' self-reported use of English and Cantonese and their level of comfort using Cantonese (N=60)

Characteristics	n		%	
Grade				
4th grade	35		58.3	
5th grade	25		41.7	
Gender				
Male	29		48.3	
Female	31		51.7	
Ethnicity				
Chinese/Chinese American	43		71.7	
Other Asian background	7		11.6	
Not Asian	10		16.7	
Length in school				
Since kindergarten	53		88.3	
Since first grade	4		6.7	
Since second grade	1		1.7	
Since third grade	2		3.3	
Language background				
Heritage speaker	44		73.3	
Non-heritage speaker	16		26.7	
Language speak with parents at home	Heritage learners		Non-heritage learners	
	n	%	n	%
Speak Cantonese all the time	5	11.4	0	0
Speak Cantonese most of the time; sometimes speak English	13	29.5	0	0
Speak English most of the time; sometimes speak Cantonese	20	45.5	3	18.8
Speak English all the time	6	13.6	13	81.2
Language speak with siblings at home				
Speak Cantonese all the time	5	11.4	0	0
Speak Cantonese most of the time; sometimes speak English	8	18.2	0	0
Speak English most of the time; sometimes speak Cantonese	15	34.1	6	37.5
Speak English all the time	16	36.3	10	62.5
Comfortable level speaking Cantonese in public				
Very comfortable	9	20.5	0	0
Somewhat comfortable	20	45.5	5	31.3
Somewhat uncomfortable	11	25	9	56.2
Very uncomfortable	4	9.0	2	12.5

Table 2

Descriptive statistics of reading, writing, listening, speaking scores by heritage language status and gender

	NL	NM	NH	IL	IM	IH	Mean (SD)	Mean for Heritage Speakers	Mean for Non-Heritage Speakers	Male	Female
Reading	12.3%	40.4%	14.0%	21.1%	8.8%	3.5%	2.84 (1.33) (n=57)	3.10 (1.36) (n=42)	2.13 (.99) (n=15)	2.32 (1.19) (n=28)	3.34 (1.29) (n=29)
Writing	1.7%	13.6%	50.8%	33.9%	0%	0%	3.17 (.72) (n=59)	3.28 (.63) (n=43)	2.88 (.89) (n=16)	2.97 (0.73) (n=29)	3.37 (0.67) (n=30)
Listening	0%	1.7%	3.3%	15%	18.3%	61.7%	5.35 (.97) (n=60)	5.66 (.71) (n=44)	4.50 (1.10) (n=16)	5.24 (1.09) (n=29)	5.45 (0.85) (n=31)
Speaking	0%	17.0%	60.4%	22.6%	0%	0%	3.06 (.63) (n=53)	3.11 (.61) (n=37)	2.94 (.68) (n=16)	2.81 (0.56) (n=27)	3.31 (0.62) (n=26)

Note. NL=Novice Low NM=Novice Mid NH=Novice High IL=Intermediate Low IM=Intermediate Mid IH=Intermediate High

Table 3

Rotated Component Matrix

Item	Factor Loadings	
	C1	C2
I try to find opportunities to use Cantonese outside of school	.76	.21
I'd like to have a job where I can use my language skills in Cantonese	.77	.12
Learning Cantonese is important to me	.87	.08
Being in the school has given me a greater appreciation for other languages	.09	.84
I am glad that I am in the school	.20	.83
The school respects my background and culture	.10	.57
Eigenvalues	2.50	1.25
Percentage of variance explained	41.64	20.90

Note. Boldface indicates factor loadings higher than .40.

Table 4.

Results of hierarchical multiple regression predicting Cantonese reading, writing, listening and speaking score

Predictors		Reading		Writing		Listening		Speaking	
		R^2	F	R^2	F	R^2	F	R^2	F
Step 1	Grade	.06	3.25	.01	.50	.03	2.04	.01	.27
Step 2	Gender	.16	11.19**	.08	5.04*	.02	.87	.15	8.99**
Step 3	Heritage language status	.09	6.69*	.06	4.04	.26	21.19***	.03	1.53
Step 4a	Attitudes towards learning Cantonese	.002	.12	.005	0.32	.03	2.61	.05	3.35
Step 4b	Attitudes towards the focal school	.09	8.26**	.02	1.48	.07	6.18*	.10	6.89*
R^2		.40		.18		.41		.34	

* p<.05,

**
p<.01,

p<.001

Appendix.: Students' survey items used in this study

Attitudes items

1. I try to find opportunities to use Cantonese outside of school.
2. I enjoy studying in CIS.
3. I enjoy learning Cantonese.
4. CIS respects my background and culture.
5. I'd like to have a job where I can use my language skills in Cantonese.
6. Being in CIS has given me a greater appreciation for other languages.
7. I am glad that I am in CIS.
8. Learning Cantonese is important to me.

Background questions

1. What grade are you in?
 - 4th
 - 5th
2. What is your gender?
 - Male
 - Female
3. What is your ethnicity: I am_____?
 - Chinese/Chinese American
 - Other Asian (not Cantonese) background
 - not Asian
4. I am a _____. (you can choose multiple answers)
 - Native Cantonese speaker (I learned how to speak Cantonese from when I was a baby)
 - Cantonese heritage learner (my parents/grandparents/relatives speak Cantonese)
 - Cantonese-English bilingual
 - Native English speaker (I learned how to speak English from when I was a baby)
5. How long have you been at CIS?

- Since kindergarten
 - Since first grade
 - Since second grade
 - Since third grade
 - Since fourth grade
 - Since fifth grade
6. At home, with your parents, how often do you speak in Cantonese and English?
- I speak Cantonese all of the time
 - I speak Cantonese most of the time; sometimes I speak in English
 - I speak English most of the time; sometimes I speak in Cantonese
 - I speak English all of the time
7. At home, with your brothers or sisters, how often do you speak in Cantonese and English?
- I speak Cantonese all of the time
 - I speak Cantonese most of the time; sometimes I speak in English
 - I speak English most of the time; sometimes I speak in Cantonese
 - I speak English all of the time
8. How comfortable do you feel about speaking Cantonese in public?
- Very uncomfortable
 - Somewhat uncomfortable
 - Somewhat comfortable
 - Very comfortable

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