Accepted manuscript for:

Author/s: Wang, C., Verdon, S., McLeod, S. and Tran, V.H.

Title: Profiles of linguistic multi-competence in Vietnamese-English speakers

Abstract: Speech-language pathologists work with increasing numbers of multilingual speakers; however, even when the same languages are spoken, multilingual speakers are not homogeneous. Linguistic multicompetence (aka multi-competence) considers competency across all languages and is associated with multiple demographic, migration, linguistic, and cultural factors.
Method: This article examines the linguistic multicompetence of adults with Vietnamese heritage living in Australia (n = 271) and factors associated with varying profiles of multilingualism. Participants completed a self-report questionnaire (available in English and Vietnamese) regarding their language proficiency and associated factors.
Results: Participants were largely (76.6%) first-generation migrants to Australia. Three distinct profiles of linguistic multicompetence were statistically identified using a cluster analysis: (a) Vietnamese proficient (n = 81, 31%), (b) similar proficiency (n = 135, 52%), and (c) English proficient (n = 43, 17%); that is, half were proficient in both languages. Multinomial logistic regression analyses compared participants profiled as having similar proficiency with those who were more dominant in one language. Factors associated with the Vietnamese proficient group (compared with the similar proficiency group) were that the participants used Vietnamese much more than English with different people across different situations, were more likely to believe that maintaining Vietnamese helped them communicate in English, and earned less. Participants in the English proficient group used English more than Vietnamese with different people across different situations, were more likely to have lived in English-speaking countries longer, were younger in age, and were less likely to believe that maintaining Vietnamese helped improve academic study than those with similar proficiency.
Conclusion: Undertaking a comprehensive language profile is an important component of any multilingual assessment to enable speech-language pathologists to develop an understanding of different presentations of linguistic multicompetence, engage in culturally responsive practice, and acknowledge that high levels of competence can be achieved across multiple languages.

Profiles of linguistic multi-competence in Vietnamese-English speakers

Cen Wang, Sarah Verdon, Sharynne McLeod, Van H. Tran

Charles Sturt University, Australia

Cen Wang, Ph.D.
School of Teacher Education
Charles Sturt University
Bathurst, NSW 2795, Australia
Phone: +61 2 63384337
Email: auwang@csu.edu.au
ORCiD: https://orcid.org/0000-0002-3151-1466
Twitter: @CenAudreyWang

Sarah Verdon, Ph.D.
School of Community Health
Charles Sturt University
Albury, NSW 2640, Australia
Phone: +61 2 6051 9357
Email: sverdon@csu.edu.au
ORCiD: https://orcid.org/0000-0002-7503-5860
Twitter: @SV_SLP

Sharynne McLeod, Ph.D.
School of Teacher Education
Charles Sturt University
Bathurst, NSW 2795, Australia
Phone: +61 2 6338 4463
Email: smcleod@csu.edu.au
ORCiD: https://orcid.org/0000-0002-7279-7851
Twitter: @SharynneMcLeod

Van H. Tran, Ph.D.
School of Teacher Education
Charles Sturt University
Bathurst, NSW 2795, Australia
Email: vtran@csu.edu.au
ORCiD: https://orcid.org/0000-0002-8855-9313

Abstract

Purpose: Speech-language pathologists work with increasing numbers of multilingual speakers; however, even when the same languages are spoken, multilingual speakers are not homogenous. Linguistic multi-competence considers competency across all languages and is associated with multiple demographic, migration, linguistic, and cultural factors.

Method: This paper examines the linguistic multi-competence of adults with Vietnamese heritage living in Australia ($n = 271$) and factors associated with varying profiles of multilingualism. Participants completed a self-report questionnaire (available in English and Vietnamese) regarding their language proficiency and associated factors.

Results: Participants were largely (76.6%) first generation migrants to Australia. Three distinct profiles of linguistic multi-competence were statistically identified using a cluster analysis: (1) Vietnamese Proficient ($n = 81$, 31%), (2) Shared Proficiency ($n = 135$, 52%), and (3) English Proficient ($n = 43$, 17%); that is, half were proficient in both languages. Multinomial logistic regression analyses compared participants profiled as Shared Proficiency with those who were more dominant in one language. Factors associated with the Vietnamese Proficient group (compared with the Shared Proficiency group): used Vietnamese much more than English with different people across different situations, were more likely to believe that maintaining Vietnamese helped them communicate in English, and earned less. Participants in the English Proficient group: used English more than Vietnamese with different people across different situations, were more likely to have lived in English-speaking countries longer, were younger in age, and were less likely to believe that maintaining Vietnamese helped improve academic study than those with Shared Proficiency.

Conclusion: Undertaking a comprehensive language profile is an important component of any multilingual assessment to enable speech-language pathologists to develop an understanding of different presentations of linguistic multi-competence, engage in culturally responsive

practice, and to acknowledge that high levels of competence can be achieved across multiple languages.

Keywords: Language proficiency, language use, English, Vietnamese, heritage language, linguistic multi-competence, multilingualism, bilingualism

PLAIN LANGUAGE SUMMARY

Speech-language pathologists (SLPs) work with increasing numbers of multilingual speakers. Each multilingual speaker is different, even if they speak the same language. Linguistic multi-competence considers competency across all languages and is associated with demographic, migration, linguistic, and cultural factors.

This paper examined linguistic multi-competence of 271 adults with Vietnamese heritage living in Australia and factors associated with varying profiles of multilingualism. Participants completed a self-report questionnaire (available in English and Vietnamese).

Participants were statistically sorted into three distinct profiles of linguistic multi-competence: (1) English Proficient (17%), (2) Vietnamese Proficient (31%), (3) Shared Proficiency (52%). Participants in the English Proficient group: used English more than Vietnamese, were more likely to have lived in English-speaking countries longer, were younger in age, and were less likely to believe that maintaining Vietnamese helped improve academic study than those in the Shared Proficiency group.

This study demonstrates the importance of undertaking a comprehensive language profile during a multilingual assessment to enable speech-language pathologists to develop an understanding of different presentations of linguistic multi-competence, engage in culturally responsive practice, and to acknowledge that high levels of competence can be achieved across multiple languages.

TWEET

Every multilingual speaker is different. Undertake comprehensive language profiles to understand linguistic multi-competence and be culturally responsive. Evidence from 271 Vietnamese-English adults.

Profiles of linguistic multi-competence in Vietnamese-English speakers

Speech-language pathologists (SLPs) work with many multilingual speakers across the world. However, there are few studies that inform SLPs' understanding of the heterogeneity of multilingual speakers. Each person has their own unique profile of linguistic multi-competence (even if two people speak the same languages). A multilingual individual's linguistic profile must be understood in order for SLPs to provide culturally and linguistically relevant support (Sanchez, 2006). An essential starting point for a multilingual assessment is to undertake a comprehensive language profile (McLeod & Verdon, 2019; McLeod et al., 2017). Without knowledge of language proficiency and use in each language for individuals and members of their family, it is not possible to accurately assess and interpret assessment data in relation to their linguistic multi-competence (McLeod et al., 2020) or plan culturally responsive intervention (Verdon et al., 2015). Specifically, language profiles can inform speech-language pathology *assessments*, to consider which assessments should be undertaken in each language. Language profiles can inform *analyses,* indicating language dominance, strengths and weaknesses in languages or modalities, and to and suggest direction of cross-linguistic transfer. Linguistic multi-competence profiles provide key data for considering whether speech and language competencies are similar or different across languages. Understanding of a person's linguistic multi-competence is key to planning *intervention* can support language competence in all of the languages spoken to enhance their participation across contexts and communication partners.

There are a number of useful language profile questionnaires and scales used by SLPs, linguists, educators, and professionals supporting multilingual speakers. For example, multilingual adults' language profiles can be considered using: History of Bilingualism Questionnaire (Paradis, 1987), Bilingual Dominance Scale (Dunn & Fox Tree, 2009), and the Language Experience and Proficiency Questionnaire (LEAP-Q) (Marian, Blumenfeld, & Kaushanskaya, 2007). Multilingual children's and families' language profiles include: Inventory to Assess Language Knowledge (ITALK) and Bilingual Input-Output Survey (BIOS) (Peña, Gutiérrez-Clellen, Iglesias, Goldstein,

& Bedore, 2014), Alberta Language Environment Questionnaire (ALEQ) (Paradis, 2011), Linguistic Multi-Competence Questionnaire (Hopf, McLeod, & McDonagh, 2018), and the Parent Language Use and Preference Questionnaire (Tannenbaum, 2003). In adult populations, self-report questionnaires such as the LEAP-Q (Marian et al., 2007) can be clinically useful as they correlate with standardized assessments, providing information about multilingual performance. Therefore, if an adult with an acquired communication disorder or their family member is able to complete such a questionnaire, their SLPs will gain a picture of their premorbid language competence to help with appropriate and relevant goal setting and intervention. More recent technological advancements have enabled the development of tools such as the Language History Questionnaire (Version 3) (LHQ3, Li et al., 2020) that enables automatic coding of language proficiency, language dominance, and language immersion data and allows weighting of different modules to suit the purpose of the data collection (Li et al., 2020). These questionnaires have been used in research and clinical practice, but have rarely been used to provide a profile of language proficiency and influencing factors.

Linguistic Multi-Competence

The current study draws upon the theory of linguistic multi-competence (Cook, 2006; 2016) to examine the language proficiency and use profiles of Vietnamese-English speaking adults in Australia and factors associated with these profiles. Linguistic multi-competence describes a person's competency across all languages spoken (Cook, 2016). It is defined as "the overall system of a mind or a community that uses more than one language" (Cook, 2016, p. 2) and incorporates both the psychological interactions between languages in the mind and the sociological influence of the language community in which a person is situated. From a linguistic multi-competence perspective, competency in individual languages is not rated against the benchmark of a monolingual speaker of each of the languages spoken, but rather the complete language system within the individual's mind is considered, with a recognition that multilingual speakers are qualitatively different from monolingual speakers due to the complex factors involved in

6

multilingual language acquisition and the effects of cross-linguistic transfer upon the phonology, vocabulary, grammar, and syntax of the languages they speak (Cook, 2003).

Multilingualism has been associated with a range of positive factors. For example, authors of a population study indicated that multilingual speakers who were proficient in both their home language (heritage language/first language/native language/mother tongue) and the dominant language of the country (English) displayed higher education, employment and income, compared to monolingual speakers and multilingual speakers who were *not* proficient in the dominant language of the country (Blake et al., 2018). Multilingualism has been identified as a protective factor against cognitive decline (including Alzheimer's disease and dementia) in adults (Bialystok, 2011). Although debate exists as to the extent to which bilingualism enhances executive function (Lehtonen et al., 2018), multiple studies have found a bilingual advantage in relation to higher levels of controlled attention and inhibition in executive control (Baumgart & Billick, 2018). These findings are in keeping with the theory of linguistic multi-competence which affects "the whole mind, i.e. all language and cognitive systems, rather than language alone" (Cook 2016, p. 15). Language proficiency in the dominant language of the country in which a person resides is associated with individuals' education, employment, income and social integration (Blake et al., 2018; Short & Fitzsimmons, 2007 and women's health (Guven & Islam, 2015).

Multilingual speakers are not homogenous (Luk & Bialystok, 2013). Multilingual speakers may differ in their proficiency of each language and may also differ in the level of proficiency in each domain of each language (Veltman, 1983). Language proficiency refers to how well a person speaks, understands, reads, and writes in a particular language. Typically, multilingual adults are more proficient in their home language than languages acquired subsequently; however, they may have similar proficiency, especially if the languages are acquired simultaneously during childhood (De Houwer, 2009). The theory of linguistic multi-competence (Cook, 2006) purports that language proficiency is associated with many factors, including: demographic factors, migration status, language use, language maintenance, cultural identity, and connections with culture/community

(Clyne, 1991). According to the theory of linguistic multi-competence (Cook, 2006; 2016) speakers do not need to be dominant in one language or another; and can be more proficient in some contexts than others (e.g., family and community life cf. workplace). Language competence is influenced by cognitive and sociological factors. The current study examines a range of factors relating to language proficiency of adults (e.g., migrants) living in an English-dominant country who speak a heritage language; specifically, adults with Vietnamese heritage living in Australia.

Vietnamese Heritage Language Speakers

Vietnamese is in the top 20 most commonly spoken languages in the world (Eberhard, Simons & Fennig, 2020), and among the most commonly spoken home language(s) in Australia, and the US (Australian Bureau of Statistics, ABS, 2016; Camarota & Zeigler, 2014; Ryan, 2013). Understanding Vietnamese-English language proficiency and supporting Vietnamese language maintenance is beneficial to individuals, families, communities, and society. For example, Vietnamese language maintenance enables global interactions with Vietnam, which has a population of over 94 million and is forecast to be a key player in the global economy (General Statistics Office of Viet Nam, 2016; World Bank, 2019) and continuing social connections at the family and community levels (Cho, 2000; Oh & Fuligni, 2010; Park & Sarkar, 2007).

Vietnamese communities in many English-speaking countries (e.g., Australia, Canada and US) originated from two main types of migration. The first type of migration was driven by refugees who left Vietnam after the war ended in 1975. The second type of migration was driven by those who sought education and employment opportunities as skilled migrants (Bradshaw et al., 2008). This second driver of Vietnamese migration to Australia has resulted in a large increase in the size of the Vietnamese community in Australia so that in the most recent census, a total of 294,798 people living in Australia identified as having Vietnamese heritage, accounting for 1.26% of the total population (Australian Bureau of Statistics, ABS, 2016). Of these, 219,357 (74.4%) were born in Vietnam, meaning they are first generation migrants to Australia (ABS, 2018).

A number of studies have investigated language use, maintenance, and shift among the Vietnamese population (Bankston & Zhou, 1995; Bradshaw et al., 2008; Cahill & Nguyen, 1995; Clyne, 1991; Kipp et al., 1995; Nguyen et al., 2001; Ninnes, 1996; Pham, 1998; Tran, 1993; 1998; Willoughby, 2018). These studies found that the importance of home language maintenance for communicating with extended family, access to cultural knowledge, employment, travel, heritage and cultural identity and the importance of language for its own sake, was widely recognized among the people in English-speaking countries with Vietnamese heritage; however, concerns were expressed regarding the probability of achieving language maintenance (Bradshaw et al., 2008). The existing studies found that the use of Vietnamese varies across context, content, and interlocutor. Ninnes (1996) found that Vietnamese was used more in the home or in cultural community settings than in public settings amongst Vietnamese-Australian Grade 11 students. Furthermore, a study by Pham (1998) found that senior high school students and university students were far more likely to use English in social settings, in public domains, and inside the classroom, and with their siblings than with their parents. Ninnes (1996) also found that students' Vietnamese use was greater with parents and grandparents than with people who were their own age or from their own generation. Similarly, adults in the Pham (1998) study reported using Vietnamese more often with people in their own generation and their parents than with their children.

A number of the existing studies of the language use of people in English-speaking countries with Vietnamese heritage have found evidence of language shift (e.g., Tran, 2018). For example, the first Vietnamese migrants to Australia, Canada and the US are now entering their third generation since migration; aligning with the finding that the shift from home to dominant language is typically completed within three generations post migration (Kipp et al., 1995). The majority of these studies have investigated language use across contexts or attitudes to home language maintenance. Less is known about multilingual proficiency. In a study that did consider proficiency, an inverse relationship was found between English competence and Vietnamese competence, with Vietnamese proficiency declining as English proficiency increased (Ninnes, 1996). Recently more

studies of Vietnamese children's speech and language acquisition, assessment and analysis have become available to English-speaking SLPs (e.g., Phạm & McLeod, 2016, 2019; Phạm, McLeod & Harrison, 2017; Pham & Ebert, 2020), providing resources for supporting Vietnamese-English speakers.

Factors Influencing Linguistic Multi-Competence

There are numerous factors that influence language maintenance among migrant populations (Clyne, 1991), including age of language acquisition, gender, income, education, generations since migration, age of migration, and number of years living in English-speaking countries, language use with different people across contexts, beliefs and attitudes towards home language maintenance, cultural identity and connections to culture (Tran et al., 2020). Each of these demographic, migration, linguistic, and cultural factors play a role in linguistic multi-competence (Cook, 2016). The survey in this study included a range of variables from each of these types of factors to investigate their impact upon Vietnamese-Australians' linguistic multi-competence. Their selection was justified by a comprehensive review of the literature, summarized below.

Demographic Factors

Demographic factors that have been associated with the language proficiency of multilingual speakers include: age of acquisition, gender, income, and education. Age of acquisition of a language has a strong association with language proficiency with earlier acquisition associated with greater proficiency, although the critical age of acquisition has been debated (DeKeyser, 2013). For example, Jia and colleagues (2002) found that age of learning English significantly predicted English proficiency of migrant adults in the US when measured on language performance tasks. Similarly, Ahn and colleagues (2017) examined 38 Korean speakers (21 Korean-English speakers in US and 17 Korean speakers in Korea) and found that perception of L1 (first language) and L2 (second language) phonological contrasts was significantly correlated with age of reduced contact with the language. Gender has also been found to be associated with language proficiency in migrant populations. For example, a study by Blake et al. (2019) found that female humanitarian

migrants (i.e., refugees) in Australia reported significantly lower English proficiency than their male counterparts. Income (i.e., access to financial resources) and education have also been associated with proficiency. For example, Portes and Hao (1998) examined 5,000 students in the US and found that socio-economic status had significant association with bilingual language proficiency. Those who were proficient in both languages were more likely to be from high-status families who attended high-status schools. A more recent study by Dixon and colleagues (2012) with 282 Singaporean children and their parents found a nuanced correlation between socioeconomic status (SES), education and home language proficiency. For Malay-speaking families, better home language proficiency was found in children whose parents had higher income and education; however, the trend was opposite in Chinese and Tamil-speaking families, where higher SES was related to lower home language proficiency.

Migration Status

Factors relating to migration status reported to be associated with the language proficiency of multilingual speakers include: generations since migration, age of migration, and number of years living in English-speaking countries. Research into migrant communities in the US has shown that proficiency in the home language decreases as the number of generations since migration increase (Veltman, 1983). Jia and colleagues (2002) found that earlier age of arrival in the US (but not number of years living in the US) significantly predicted adults' English proficiency with earlier arrival related to better performance on English language tasks, higher self-rated proficiency in English, and lower self-rated proficiency in the home language (Jia et al., 2002). Similarly, Ninnes (1996) found that Vietnamese-Australian students who had migrated at a younger age and had resided in Australia for longer had lower Vietnamese proficiency and higher English proficiency. These migration factors were more influential in language maintenance than ethnic identity or attitudes to cultural maintenance (Ninnes,1996). To summarize, early age of migration to English-speaking countries is related to better English outcomes and poorer first language maintenance.

Language Use

Language use with different people across different settings is reported to be associated with the language proficiency of multilingual speakers (Kennedy & Romo, 2013). For example, Blake et al. (2019) found that increased use of English (e.g., in conversation with native speakers) increased self-rated proficiency among multilingual university students in Australia. Cho (1998) studied 114 Korean-English adults in the US and found that talking with parents in Korean, reading Korean, and watching Korean programs increased their Korean language competency. Similarly, Kim and Pyun (2014) studied 76 Korean-English speakers in the US and found that Korean literacy proficiency was associated with use of Korean language in the home and focused Korean language practice. Additionally, Kipp et al. (1995) found that language maintenance typically occurs in the home with the responsibility largely falling to parents.

Language Maintenance: Beliefs and Attitudes

Beliefs and attitudes towards home language status and the importance of maintenance has been associated with the language proficiency of multilingual speakers. For example, a study by Yashima (2002) found that among Japanese language learners the international posture (i.e., status) of a language increased motivation for learning that language which in turn led to increased proficiency in the language. This finding is further supported by Young and Gardner (1990): people with positive attitudes toward home culture and language among Chinese migrants to Canada were more likely to be proficient in both Chinese and English while those who had negative attitudes towards their home language and culture were more likely to be English dominant. Interestingly, students in the Pham (1998) study held more positive views towards the maintenance of Vietnamese language and culture and the retaining of their ethnic identity than adults, although these attitudes were not examined in relation to language proficiency. The complex contradictions that can exist within communities between their beliefs of the importance of culture and language maintenance and the reality of their actions towards achieving such maintenance are explored in theories of superdiversity (Blommaert & Varis, 2011) where competing ideologies co-exist within multicultural people in an increasingly globalized world.

Cultural Identity

Perceptions of cultural identity have been associated with the language proficiency of multilingual speakers (Oh & Fuligni, 2010). A meta-analysis of the relationship between ethnic identity and home language proficiency found that an increased sense of cultural identity was positively correlated with proficiency (Mu, 2015). For example, Lee (2002) studied 40 second-generation Korean-American students and found that "strength of bicultural identification" (p. 117) was related to proficiency in Korean. In keeping with the notion of bidimensional model of acculturation (Cabassa et al., 2003), the current study sought to investigate whether cultural identity (i.e., identity with Vietnamese culture, Australian culture, or both), was related to language proficiency.

Connections with Culture

Connections with culture have been associated with the language proficiency of multilingual speakers. For example, visiting the home country has been found to increase home language proficiency (e.g., Cho, 1998). Similarly, contact with members of the second language community has been found to be associated with language acquisition and confidence in a study by Clément and colleagues (1980) of 223 francophone speakers in Canada. In the Vietnamese community, religion has been found to play an important role in home language maintenance (Tran,1993; 2018). In the Tran (2018) study, Vietnamese Catholic communities were found to be important social systems for the Vietnamese immigrants in Australia and France. Religious organisations had contributed significantly to Vietnamese migrant communities' language maintenance, cultural integration and construction of a strong Vietnamese collective identity.

Studying Vietnamese-English Language Proficiency

Two main aspects are considered in language maintenance research: *language proficiency* (Ninnes, 1996) and *language use* in particular domains (language use settings, content of interactions, and language use with particular interlocutors). Previous studies examining language proficiency have been criticized because sampling issues tend to obscure findings. In order to

conduct a robust study, DeKeyser (2013) suggested that studies of immigrants' language proficiency should include: speakers of the same language(s), languages that are distinct/distant from one another, participants who have time to use/practice L2, participants from a range of socioeconomic levels, participants who have lived in the country for more than 10 years, participants who are middle aged or younger, 20 participants per subgroup, and a homogeneous spread across age groups. To address the gap in the literature, the current study sought to examine the language proficiency of adults with Vietnamese heritage living in Australia, using a sample that met many of the criteria outlined by DeKeyser (2013) and addressed a language group not typically studied. For the speech-language pathology profession, an understanding of the complex profiles of linguistic multi-competence that can exist within the same language community and the factors that affect linguistic multi-competence are essential to support culturally responsive assessment, and to provide an understanding of an individual's social context and language use to support intervention planning.

Aims

The aims of this paper are to:

1. Identify linguistic multi-competence profiles among people with Vietnamese heritage living in Australia.

2. Explore the associations between different language proficiency profiles and the associated factors (demographics, migration status, language use, language maintenance, cultural identity, connections with culture/community).

Method

Context

This research is a component of a larger project titled *VietSpeech: Vietnamese-Australian children's speech and language competence* exploring Vietnamese language proficiency, use, and maintenance in Australia across four studies (https://www.csu.edu.au/research/vietspeech). Approval was received from the Charles Sturt University Human Research Ethics Application

Committee (approval number: H18084). Additional information about the participants, questionnaire, and procedure from Study 1 is documented in McLeod et al. (2019). Information about study 2 is documented in McLeod et al. (2021). Studies 3 and 4 are underway.

Participants

A total of 271 participants from VietSpeech Study 1 met the inclusion criteria. That is, they had Vietnamese heritage, lived in Australia, were 18 years or older, consented, and completed a self-report questionnaire. The average age of the participants was 40.01 years (SD = 12.74, range = 18-78 years, *Skewness* = .565, *Kurtosis* = .236). There were more females (n = 202, 75.7%) than males. Most had a university education (i.e., n = 191, 84.2% had a bachelor's degree or above) and 56.7% (n = 127) were professionals (e.g., in arts, media, business, engineering, education, health, legal). They lived in every state and territory in Australia, except the Northern Territory. Most were first generation immigrants (n = 187, 76.6%) and most were born in Vietnam (n = 213, 87.3%). Vietnamese was the first language of most of the participants (n = 249, 94.3%), as well as the first language of their mothers (n = 238, 98.3%) and fathers (n = 233, 97.5%). When compared with the Vietnamese community in Australia, the current sample had similarities and differences. For example, like the current sample, 74.4% of Australians who identified as having Vietnamese ancestry in the 2016 census were first generation migrants and the median age was 45 years (ABS, 2018). In contrast, the current sample had a higher proportion of females than the Vietnamese-Australian population (55.3%) and the current sample had higher levels of tertiary education and income (ABS, 2018).

Procedure

A 2-part questionnaire was developed by the research team after an extensive review of the literature (e.g., Cavallaro, 2005; Kang, 2015; Luo & Wiseman, 2000; Park, 2007; Tannenbaum, 2003). The first part was focused on adults and the second part was focused on parents and children. This study draws on Part 1 that consisted of 42 questions designed to consider Vietnamese adults' demographics, migration status, language proficiency, language use, home language maintenance,

family language background, cultural identity, and connections with Vietnamese culture/community (Supplemental Appendix). Potential participants were recruited via social media, email, websites, and personal contact within the researchers' personal and professional networks and extended using snowball sampling. Potential participants were provided with an information sheet and consent form, and were invited to complete the anonymous self-report questionnaire. The questionnaire was available in both English and Vietnamese and both language versions were available online and in hard copy (provided with a return paid envelope). There were 315 people who commenced the questionnaire, and 271 whose questionnaires were eligible for inclusion in the study (living in Australia, having Vietnamese heritage, being 18 years or older, providing responses to the questionnaire after consenting): 183 of the 271 participants answered the English version of the questionnaire (online: $n = 183$; paper: $n = 0$) and 88 of the 271 participants answered the Vietnamese version of questionnaire (online: $n = 60$; paper: $n = 28$). Data from the hard copy versions was entered into *Statistical Package for Social Sciences* program Version 25 (SPSS, IBM Corp, 2017) by two trained research assistants who were proficient in English and Vietnamese.

Measures

Language Proficiency

Individuals' Vietnamese and English language proficiency was examined using items adapted from Blake et al. (2019). Participants were asked to rate how well they speak, understand, read and write Vietnamese and how well they speak, understand, read and write English in their daily life in four separate questions for each language, on a 5-point scale (1 = *not at all*, 2 = *not well*, 3 = *average*, 4 = *well*, 5 = *very well*) (4 items, $\alpha = .95$ for Vietnamese; 4 items, $\alpha = .98$ for English). Mean scores of Vietnamese and English language proficiencies were created with a higher score indicating higher Vietnamese and English language proficiency.

Demographics

Demographic variables that were examined in relation to participants' profiles of language proficiency included: participants' age in years, gender, income (ranging from 1 = *nil income*, 2 =

$1-$399 per week to *7 = $3,000 or more per week*), and highest level of education obtained either in Australia or Vietnam. There are three categories for education: a lower level of education (*an advanced diploma, certificate, year 12, year 10, or below*), a *bachelor's degree*, and a high level of education (*graduate diploma/certificate* or *postgraduate degree*). Participants' first language and birth country factors were unable to be included in the analysis due to a lack of variance: a high proportion of participants had Vietnamese as their first language (94.3%) and were born in Vietnam (87.3%).

Migration Status

Migration status included participants' generation of immigration and the number of years they had lived in English-speaking countries. Response options to the generation of immigration were adapted from Lam (2011): first generation (born outside of Australia and arrived in Australia as an adult or late teen), 1.5 generation (born outside of Australia but immigrated to Australia as a child or teenager), second generation (born in Australia to parents who immigrated to Australia), third generation (born in Australia and grandparents immigrated to Australia), and other. Due to the small number of responses in the third-generation category ($n = 1$) and the other category ($n = 8$), these two categories were coded as missing for further analyses. As such, the variable of generation of immigration had three categories: *first generation, 1.5 generation*, and *second generation*. The number of years the participants had lived in English-speaking countries was an ordinal variable ranging from less than one year to all their life (*Skewness* = .40, *Kurtosis* = -1.34). For people living in English-speaking countries all their life, the years ranged from 20 to 37 years. The responses of 16 participants were amended by two researchers collaboratively to align their responses to the questions regarding the number of years living in English-speaking countries with the number of years living in Australia so that their responses were consistent.

Language Use

Items reflecting individuals' language use were adapted from Park (2007) and captured language use with different people (e.g., What language/s do you use with your father?), different

places (e.g., What language/s do you use at work?), and in different media (e.g., What language/s do you use in social media?), on a 7-point scale (1 = *English always*, 2 = *mostly English sometimes Vietnamese*, 3 = *English and Vietnamese equally*, 4 = *mostly Vietnamese sometimes English*, 5 = *Vietnamese always*, 6 = *another language*, 7 = *not applicable*) (29 items, α = .92). A mean score of language use was created by averaging responses 1-5 for all questions (and excluded responses to 6 and 7). A lower score indicated more use of English and higher score indicated more Vietnamese.

Perceptions of the Importance of Reasons for Language Maintenance

Participants were asked to report their perceptions of the importance of six reasons for maintaining Vietnamese language: maintaining bonds with relatives, maintaining Vietnamese cultural identity, helping build friendships, improving academic study, helping communicate in English, and having wider career options, on a 5-point scale (1 = *not at all important*, 2 = *somewhat important*, 3 = *important*, 4 = *very important*, 5 = *extremely important*).

Cultural Identity

Participants self-reported on their beliefs about cultural identity, and their attitudes towards the importance of maintaining Vietnamese and Australian cultural identity using questions informed by Ho (2010) and Park (2007). Specifically, participants were asked where they see themselves along the 5-point scale (with the endpoints stating 1 = *I consider myself Vietnamese*; 5 = *I consider myself Australian*). If participants indicated '3' this was interpreted that they considered themselves as both Vietnamese and Australian. Participants were also asked to rate on a 6-point scale to what extent they agree or disagree with the following two questions: "It is important to maintain my Vietnamese culture, values, and language" and "It is important to maintain my Australian culture, values, and language" (1 = *strongly disagree*, 2 = *disagree*, 3 = *neither agree nor disagree*, 4 = *agree*, 5 = *strongly agree*, 6 = *not applicable*). The response option of six was considered as missing and was rarely used. The two questions where people chose not applicable were: the importance of maintaining Vietnamese (0.4% chose *not applicable*) and the importance of Australian cultural identity (4.3% chose *not applicable*).

Connections with Vietnamese Community

Participants were asked about their frequency of attendance of community events, whether they regularly visit Vietnam (*yes* vs. *no*), whether they live near a large number of Vietnamese people (*yes* vs. *no* vs. *not sure*), and whether there is a place in their community where Vietnamese people meet (*yes* vs. *no* vs. *not sure*). For attendance of community events, participants were asked to rate on a 5-point scale (1 = *weekly*, 2 = *fortnightly*, 3 = *monthly*, 4 = *yearly*, 5 = *never*). Intention to live in Vietnam in the future was unable to be included in the analysis because few of the participants chose *yes* (16.4%).

Data Analysis

Cluster analyses

To identify profiles of participants' linguistic multi-competence, a cluster analysis was conducted. A cluster analysis is a person-centred analysis that identifies groups of participants who share similar response patterns, in this case, regarding Vietnamese and English language proficiency. Specifically, hierarchical cluster analysis using Ward's method was conducted in SAS University Edition (SAS Institute, Cary, NC), based on standardized scores of Vietnamese and English language proficiency. A number of fit indices were consulted, including R^2, root mean squared standard deviation (RMSSTD), Pseudo F and Pseudo t^2 statistics, to identify the optimal cluster solution (Milligan & Cooper, 1985).

Bivariate analyses between Profiles and Factors

To explore the associations between profiles and a range of demographic, migration, linguistic, and cultural factors, Chi-square analyses and Analysis of Variance (ANOVA) were conducted in SPSS (IBM Corp, 2017). Chi-square analyses were used to explore the relationship between the profiles and categorical factors. When more than 20% of the cells had expected counts less than 5, Fisher's exact test was used (Pallant, 2016). Adjusted standardized residuals were referred to for an understanding of significant chi-square results. Adjusted standardized residuals larger than |2| indicate that a particular cell is significantly higher or lower than expected,

contributing to the overall significance of the chi-square test statistics. Effect size was indicated using Cramer's V. For chi-square analyses including one categorical variable with two categories, the values of .01, .30, and .50 indicate small, medium and large effect sizes respectively. For chi-square analyses including one categorical variable with three categories, the values of .07, .21, and .35 indicate small, medium and large effect sizes respectively.

ANOVA was used to examine the relationship between the profiles and factors that were ordinal and continuous. Effect size was indicated using partial-eta squared, with values of .01, .06, and .14 as benchmarks for small, medium and large effect sizes respectively. Following significant ANOVA results, Sidak and Games-Howell post-hoc tests were used to examine the specific differences among profiles for each of the factors when the homogeneity of variances was met and violated, respectively.

Multinomial Logistic Regression

Based on the results of bivariate analyses between participants' language profiles and factors, significant factors were then further analysed simultaneously in a multinomial logistic regression using Mplus v.8 (Muthén & Muthén, 1998-2017), with maximum likelihood estimator and montecarlo integration methods. Missing data were accounted for by using full information maximum likelihood indicator (FIML) incorporated in Mplus (Muthén & Muthén, 1998-2017), which produces more accurate parameter estimates (Baraldi & Enders, 2010).

Multinomial logistic regression was conducted to explore the relative associations of significant factors and participants' language proficiency profiles after controlling for the effect of each other. Odds ratio (OR) and the associated 95% confidence interval of each factor were reported. An OR less than 1 indicates that the increase in the factor is associated with lower likelihood of being in the target profile versus the reference profile. An OR larger than 1 indicates that the increase in a factor is associated with higher likelihood of being in the target profile versus the reference profile. An OR of 1 indicates that there is no association between the factor and participants' language proficiency profiles.

<center>**Results**</center>

Cluster Analyses

The multiple fit indices (Table 1) and the mean responses regarding participants' Vietnamese and English proficiency in each cluster indicated that a three-cluster solution was the best solution. The three-cluster solution included a profile of participants who were Vietnamese Proficient ($n =$ 81, 31.3%)*,* a profile of participants who had Shared Proficiency ($n =$ 135, 52.1 %), and a profile of participants who were English Proficient ($n =$ 43, 16.6 %). The three-cluster solution was theoretically meaningful, and the clustering variables of Vietnamese and English language proficiency were statistically different across the clusters. The means of participants' Vietnamese and English proficiency using standardized scores across clusters are graphically displayed in Figure 1. A breakdown of participants' Vietnamese and English language proficiency using raw scores across profiles is shown in Table 3.

Language Proficiency

Participants in the Vietnamese Proficient profile were characterized by comparatively slightly above average Vietnamese proficiency and low English proficiency. More than 70% of participants in this profile rated themselves as speaking, understanding, and reading Vietnamese *very well*. About 64% of participants rated themselves as writing Vietnamese *very well*. In contrast, no participant in this profile rated themselves as *very well* in speaking, understanding, reading, and writing English. Instead, the majority of participants in this profile reported being *average* in the four aspects of their English proficiency.

Participants in the Shared Proficiency profile were characterized by comparatively high Vietnamese and above average English proficiency. All participants in this profile rated themselves as understanding and reading Vietnamese *very well*. A vast majority of participants in this profile rated themselves as speaking Vietnamese *very well* (97.8%) and writing Vietnamese *very well* (93.3%). For English, around two-thirds of the participants rated themselves as speaking,

understanding, reading and writing English *well*, and about one-third of the participants rated themselves as *very well* in the four aspects of English proficiency.

Participants in the English Proficient profile were characterized by comparatively low Vietnamese proficiency and high English proficiency. The majority of the participants (more than 66%) rated themselves as speaking and understanding Vietnamese either *average* or *well*. In contrast, the majority of the participants (more than 55%) rated themselves as reading and writing Vietnamese either *not at all* or *not well*. For English, a vast majority of participants (more than 90%) rated themselves as speaking, understanding, reading and writing *very well*.

Bivariate Analyses between Clusters and Factors

The bivariate relationships between the three profiles and a range of factors are shown in Table 4.

Demographics

There were significant differences in *age* across the three profiles, $F(2, 240) = 10.41$, $p < .001$, $\eta_p^2 = .08$ (i.e., medium effect). Participants who were Vietnamese Proficient were older than those who had Shared Proficiency (mean difference = 6.11, 95% CI = 1.25–10.97, $p = .01$), who in turn, were marginally older than those who were English Proficient (mean difference = 4.32, 95% CI = -0.32–8.96, $p = .07$). There was no *gender* difference across the three profiles of language proficiency, $\chi^2 = 2.37$, $p = .31$, Cramer's V = .10 (i.e., small effect). There were significant differences in participants' *income* across the three profiles, $F(2, 213) = 23.72$, $p < .001$, $\eta_p^2 = .18$ (i.e., large effect). Participants who were English Proficient had higher income than participants who had Shared Proficiency (mean difference = .68, 95% CI = .002–1.36, $p = .05$), who in turn, had higher income than those who were Vietnamese Proficient (mean difference = 1.35, 95% CI = .76–1.95, $p < .001$). There were significant differences in participants' *education* across the three profiles, $\chi^2 = 34.89$, $p < .001$, Cramer's V = .28 (i.e., medium effect). The adjusted standardized residuals revealed that participants who were Vietnamese Proficient were more likely than expected to have a lower level of education (an advanced diploma, certificate, year 12, year 10,

or below) or a bachelor's degree and were less likely than expected to have a higher level of education (graduate diploma/certificate or postgraduate degree). The opposite pattern was observed for the group who had Shared Proficiency. Participants in this group were more likely than expected to have a higher level of education and were less likely than expected to have a bachelor's degree. Participants who were English Proficient were more likely than expected to have bachelor's degree and were less likely than expected to have a higher level of education.

Migration Status

There were significant differences in the generation of immigrants among participant across the three profiles, Fisher's exact test = 137.80, $p < .001$, Cramer's V = .59 (i.e., large effect). Participants who were Vietnamese Proficient were more likely than expected to be first generation immigrants and were less likely than expected to be second generation immigrants. Participants who had Shared Proficiency were more likely than expected to be first generation immigrants and were less likely than expected to be 1.5 and second-generation immigrants. Participants who were English Proficient were more likely than expected to be 1.5 and second-generation immigrants and less likely to be first-generation immigrants. Due to the small number of participants in the 1.5 and second-generation immigrant category, this variable was not included in the later multinomial logistic regression due to small cells having zero variance.

There were significant differences in the number of years participants have been living in English speaking countries across the three profiles, $F (2, 223) = 80.70$, $p < .001$, $\eta_p^2 = .42$ (i.e., large effect). Participants who were English Proficient stayed a significantly longer time in English speaking countries compared to those who were Vietnamese Proficient (mean difference = 19.45, 95% CI = 16.41–22.50, $p < .001$) and those who had Shared Proficiency (mean difference = 18.59, 95% CI = 16.39–20.78, $p < .001$). No differences in years staying in English speaking countries were found between the latter two groups (mean difference = .86, 95% CI = -2.56–4.29, $p = .82$).

Language Use

There were significant differences in the language use among participants across the three profiles, $F(2, 252) = 100.07$, $p < .001$, $\eta_p^2 = .44$ (i.e., large effect). Participants who were Vietnamese Proficient were likely to use more Vietnamese relative to English than participants who had Shared Proficiency (mean difference = .45, 95% CI = .22–.68, $p < .001$), who in turn used more Vietnamese relative to English than participants who were English Proficient (mean difference = 1.12, 95% CI = .94–1.31, $p < .001$).

Perceptions of the Importance of Reasons for Language Maintenance

There were significant profile differences on participants' perception of the importance of three out of six reasons for language maintenance of Vietnamese: "help build friendships", $F(2, 235) = 12.47$, $p < .001$, $\eta_p^2 = .10$ (i.e., medium effect); "improve academic study (school, university)", $F(2, 228) = 7.87$, $p < .001$, $\eta_p^2 = .10$ (i.e., medium effect); "help you communicate in English", $F(2, 229) = 15.36$, $p < .001$, $\eta_p^2 = .12$ (i.e., medium effect). For the reason of "help build friendship", participants who were English Proficient rated this reason lower compared to those who were Vietnamese Proficient (mean difference = -1.06, 95% CI = -1.59– -.52, $p < .001$) and who had Shared Proficiency (mean difference = -.91, 95% CI = -1.41– -.42, $p < .001$).

No differences were found between the latter two groups (mean difference = .14, 95% CI = -.27–.55, $p = .79$). For the reason of "improve academic study", participants who were English Proficient rated this reason lower compared to those who were Vietnamese Proficient (mean difference = -.93, 95% CI = -1.50– -.37, $p < .001$) and who had Shared Proficiency (mean difference = -.53, 95% CI = -1.05– -.02, $p = .04$). No differences were found between the latter two groups (mean difference = .40, 95% CI = -.04–.83, $p = .08$). Secondly, for the reason of "help you communicate in English", participants who were Vietnamese Proficient rated it higher in importance than those who had Shared Proficiency (mean difference = .61, 95% CI = .18– 1.04, $p = .003$), followed by participants who were English Proficient (mean difference = .68, 95% CI = .17– 1.19, $p = .005$). There were no differences in people's rating of the importance of

"maintaining bonds with relatives", "maintaining their Vietnamese cultural identity" and "having wider career options" across the three groups.

Cultural Identity

Participants who were English Proficient were more likely to culturally identify as Australians compared to those who were Vietnamese Proficient (mean difference = 1.25, 95% CI = .72– 1.78, p < .001) and those who had Shared Proficiency (mean difference = 1.10, 95% CI = .62– 1.57, p < .001), F (2, 210) = 18.60, p < .001, η_p^2 = .15 (i.e., large effect). There were no significant differences across profiles on their attitudes towards the importance of maintaining their Vietnamese and Australian cultural identity.

Connections with Vietnamese Community

There were significant differences across profiles on the frequency of attending Vietnamese community activities, F (2, 235) = 4.76, p = .009, η_p^2 = .04 (i.e., small effect). Participants who were English Proficient attended Vietnamese community activities less frequently compared to those who were Vietnamese Proficient (mean difference = -.61, 95% CI = -1.10– -.12, p = .01), and those who had Shared Proficiency (mean difference = -.44, 95% CI = -.86– -.02, p = .04). There was a significant relationship between the language proficiency profiles and whether participants visited Vietnam frequently, χ^2 = 8.78, p = .012, Cramer's V = .19 (i.e., small effect). Participants who were English Proficient were less likely than expected to visit Vietnam regularly and were more likely than expected to *not* visit Vietnam regularly. There were no significant relationships between language proficiency profiles and whether they lived near a large number of Vietnamese people, or whether there was a place where Vietnamese people met in their community.

Multinomial Logistic Regression

Based on the results of the bivariate analyses, a number of factors were significantly associated with participants' language proficiency profiles. These factors were age, income, education, number of years living in English-speaking countries, language use, the perceptions that that language maintenance helps build friendship, improves academic study, and helps

communicate in English, perceptions of cultural identity, the frequency of attendance of community events, and whether or not they regularly visit Vietnam. These statistically significant factors were then included simultaneously in the multinomial logistic regression model to evaluate their relative importance in predicting participants' language proficiency profiles. Missing data were accounted for using FIML which resulted in a total sample size of $n = 264$ for the multinomial logistic regression analysis. The categorical factor of education was included in the multinomial logistic regression model as dummy coded variables with the category of advanced diploma and below as the reference category. For the nominal outcome variable of participants' language proficiency profiles, the profile of participants who had Shared Proficiency was treated as the reference category in the analyses. As such, the profile of English Proficient and Vietnamese Proficient were compared to the profile of Shared Proficiency.

Results of multinomial logistic regression are shown in Table 5. It is important to note that the significant factors reported below are associated with (describe) the participant groups, but do not indicate a cause and effect relationship. Specifically, compared to participants in the Shared Proficiency profile, participants in the Vietnamese Proficient profile earned less, used Vietnamese much more than English with different people across different situations, and were more likely to believe that maintaining Vietnamese helps them communicate in English. Compared to participants in the Shared Proficiency profile, participants in the English Proficient profile were younger in age, were more likely to have lived in English speaking countries longer, used English much more than Vietnamese with different people across different situation, and were less likely to believe that maintaining Vietnamese helps improve their academic study. No other factors were significant.

Discussion

The current study contributes to SLPs' understanding of the profiles of linguistic multi-competence of adults with Vietnamese heritage living in and English-speaking country, as well as factors that are associated with different profiles. Three distinct profiles were found. Approximately half of the participants who had Vietnamese heritage living in Australia were proficient in both

Vietnamese and English (Shared Proficiency), while the other half were predominantly proficient in either Vietnamese (Vietnamese Proficient) or English (English Proficient).

Profiles of Linguistic Multi-Competence

The three distinct profiles of linguistic multi-competence identified in this study provide insights into common distributions of language profiles among Vietnamese-Australian adults. The first cluster, Vietnamese Proficient, was characterized by high levels of proficiency in Vietnamese across all modalities (speaking, understanding, reading and writing) and relatively lower (i.e., average) skills in English across all domains. Interestingly, when looking at cluster two, Shared Proficiency, the speakers rated themselves very highly in both languages. Those in the third profile, English Proficient, showed a different pattern of multilingualism, whereby the home language (Vietnamese) was significantly weaker than the dominant language (English). This profile is reflective of the theory of language shift (Pauwels, 2016; Veltman, 1983), where the dominant language of a society replaces the home language of a multilingual speaker. Lower skills in reading and writing Vietnamese by participants in the third profile aligns with previous research that has found migrants experiencing language shift are typically stronger in oral than written language modes of the home language (Ninnes, 1996; Veltman, 1983). Researchers studying the Vietnamese diaspora in the US found proficiency in Vietnamese reading and writing was associated with a stronger link to Vietnamese culture (Bankston & Zhou, 1995). These findings are in keeping with Cook's (2016) theory of linguistic multi-competence which highlights that a person can be a competent multilingual speaker but may not attain proficiency in all languages spoken and across all domains, rather language proficiency is developed and maintained according to the function and use of that language in a person's life.

Factors Associated with Linguistic Multi-Competence

The initial bivariate analyses shed light on the different characteristics of the three profiles. Participants within the Vietnamese Proficient profile were relatively older first-generation migrants who mostly used Vietnamese with different people across different situations and participated in

Vietnamese community activities more frequently. They were more likely to identify as Vietnamese and believed maintaining Vietnamese was important to build friendships, improve academic study and to help communicate in English. In keeping with previous research, the Vietnamese Proficient profile tended to have a lower level of education and income than the Shared Proficiency profile (Kula & Paik, 2016). This may be because the participants in the Vietnamese Proficient profile were older and therefore more likely to be migrants who arrived in Australia as refugees. This finding is in keeping with previous research which found that age of migration to an English-speaking country impacts English proficiency (Jia et al., 2002; Ninnes, 1996) including migrants who arrived as refugees who have lower English scores compared with economic migrants (Bradshaw et al., 2008). Participants in the Shared Proficiency profile were relatively younger, first-generation migrants who used Vietnamese and English equally. They had relatively higher income and the highest level of education. They rated helping build friendships and improving academic study as important reasons for maintaining Vietnamese. They were also more likely to maintain their Vietnamese cultural identity. Participants in the English Proficient profile were young 1.5 and second-generation migrants who used English mostly with different people across situations. They spent the longest time in English speaking countries. They were more likely to identify culturally as Australian and they did not see maintaining Vietnamese as important for building friendships, improving academic study or helping communicate in English. They attended Vietnamese community activities less frequently and were less likely to visit Vietnam regularly.

When significant bivariate factors were simultaneously analysed using a multinomial logistic regression analysis, a few factors remained significant after controlling for the effect of each other. Participants in the English Proficient profile were much more likely to have lived in an English-speaking country for longer than participants in the Shared Proficiency profile; they were also younger, used English with more people across more situations, and were less likely to believe that maintaining Vietnamese helped improve academic study. When these four factors were combined, a picture emerged aligning with the findings of Ninnes' (1996) study of Vietnamese-

Australian students. It was likely that although the majority of participants in the study were first generation immigrants, the English Proficient profile represented the younger participants who immigrated to Australia at a time where they were able to engage in English-language learning while in formal education (school and university). Consequently, they had many opportunities to develop social, educational, and occupational networks of English-speaking people (since English is the only official language in Australia and is the language of education). These findings regarding the impact of age of acquisition, education, and opportunity for language use upon English proficiency align with previous research (e.g., Blake et al., 2019; Dixon et al., 2012; Jia et al., 2002) and, in keeping with previous research (Tran, 2018), indicate that language shift towards English is occurring among younger members of the Vietnamese Australian population. In contrast, those in the Vietnamese Proficient profile group were more likely to use Vietnamese with people across situations. Additionally, they earned less and believed that Vietnamese helped them learn English when compared with bilingual Vietnamese-English speakers. These findings regarding the association between income and opportunity for home language use also align with previous research regarding the Vietnamese-Australian community's access to financial resources (Bradshaw et al., 2008) and links with other home language users (e.g., Kim & Pyun, 2014; Portes & Hao, 1998).

Interestingly in this study the largest determinant of linguistic multi-competence was age rather than generations since migration. This may be influenced by the large number of first-generation migrants in this sample, meaning there was less opportunity to explore the differences in linguistic multi-competence profiles between different generations since migration. Specifically, the current sample is more representative of the second type of migration, that is, Vietnamese economic migrants to Australia than the first type of migrants who came to Australia from Southern Vietnam as refugees following the war after 1975. However, as previously mentioned, the current sample is similar to the population of Vietnamese-Australians in terms of generations since migration (i.e., most are first generation). Therefore, the influence of generations since migration upon linguistic

multi-competence is less prominent in the Vietnamese Australian community as a whole (cf. Italian and Greek migrants in the post-World War II era) due to the continuation of first generation Vietnamese migrants to Australia; however, the influence of generations since migration upon linguistic multi-competence may apply more closely to Vietnamese migrants who were post-war refugees in the 1970s whose families are entering their second and third generations since migration.

Limitations

Every attempt was made to accommodate the recommendations by DeKeyser (2013) to generate a robust study sample. The participants spoke the same languages (Vietnamese and English) and these languages were distinct from one another (e.g., Vietnamese is a tonal language and English is not). There were more than 20 participants per language profile. The majority of participants had time to use/practice L2; however, only 44.3% had lived in an English-speaking country for more than 10 years. The mean age of participants was "middle aged" (mean age = 40.01 years; SD = 12.74), with a spread across ages (age range = 18-78 years). However, the participants were not from a range of socioeconomic levels (more likely to have a bachelor's degree or above) and 56.7% were professionals. It is acknowledged that the similarities and differences between the current sample and the Vietnamese-Australian population as a whole must be considered in the interpretation of these findings. It is also acknowledged that the sample contained adults who were highly educated, competent communicators; therefore, judgement is needed when using these data to inform practice with people with communication disorders, families and children.

It is acknowledged that the accuracy of self-reported proficiency, as was used to identify proficiency clusters in this study, is contested. For example, Gibbons and Ramirez (2004) found self-reported proficiency to be highly accurate when compared with performance on proficiency tests. In contrast Peacock (1999) found a low correlation between self-reported proficiency and objectively measured proficiency using language testing; however, variation in self-reported language proficiency was found by gender, with females self-reporting proficiency more accurately

than males. Given that the majority of participants in this study were female this may strengthen the use of self-reported data. Blake et al. (2019) also found differences in self-reported English proficiency by country of origin which may be relevant to the current data, with participants from Southeast Asian language background more likely to report lower proficiency. Furthermore, it is recognized that proficiency is only one aspect of determining a person's linguistic-multicompetence, and that considerations of other aspects such as exposure, use or language environment were not extensively explored in this study (Leclercq et al., 2014; Treffers-Daller & Silva-Corvalán, 2016). As such, more objective measurement techniques such as direct assessment, or more in-depth measures such as recorded samples or ethnographic techniques may have provided different findings (MacIntyre, Noels, & Clément, 1997). Blommaert and Rampton (2011) highlight the limitations of language research that reduces the fluidity of language use across superdiverse migrant communities into quantitative ratings of named languages as was the method in the current study. Future research may seek to further investigate the complexities of language proficiency and use within the Vietnamese-Australian population using both quantitative and qualitative methodologies such as ethnography, as suggested by Blommaert and Rampton (2011).

Clinical Implications

While it is recognized that these data pertain to an educated sample of Vietnamese Australians, this paper has a number of important clinical implications for SLPs working with multilingual populations across the world. Understanding that multilingual people, even those within the same language group, are heterogeneous and that each person has their own unique profile of linguistic multi-competence is essential for being able to support multilingual speakers in speech-language pathology (Sanchez, 2006). It is for this reason that undertaking a comprehensive language profile is an essential starting point for any multilingual assessment (McLeod & Verdon, 2019; McLeod et al., 2017). Without knowledge of an individual's language proficiency and use in each of their languages it is not possible to accurately interpret assessment data in relation to their linguistic multi-competence (Hopf, McLeod & McDonagh, 2018; McLeod et al., 2020) or to plan

culturally responsive intervention (Verdon et al., 2015). In particular, SLPs may use data from a person's linguistic multi-competence profile to identify whether an interpreter is needed and whether written information need to be translated into home languages depending on the strengths identified in each of their language and modalities of language.

SLPs can apply data from this paper to assessment and analysis. This paper outlines elements to be considered when undertaking a comprehensive language profile assessment, highlighting the importance of considering language proficiency across the four domains of speaking, understanding, reading and writing, as well as language use across different contexts and different interlocutors. This paper also provides an understanding of how to interpret multilingual speakers' language profiles, clinical implications for different profiles of linguistic multi-competence, and factors to consider (e.g., a strength or weakness in a particular language or modality). Multilingual speakers who have weaknesses in all languages are more likely to require SLP support than those who demonstrate cross-linguistic transfer across languages.

Additionally, the data from the second cluster in this study (Shared Proficiency) add to the body of literature that demonstrates that high levels of competence across multiple languages can be achieved and therefore SLPs can encourage the maintenance of home languages in addition to the acquisition of English, countering prevalent narrative in English-dominant countries that embrace a "monolingual mindset" (Clyne, 2008). The findings also support SLPs' inclusion of a comprehensive language profile in multilingual assessments to develop an understanding of different presentations of linguistic multi-competence, engage in culturally responsive practice, and to differentiate between typical multilingualism and the presence of communication difficulty/disorder for each profile.

Conclusion

The findings of this study support SLPs' understanding of the unique profiles of linguistic multi-competence that can exist within language communities and the range of associated factors for different groups speaking the same language. The findings of this study indicated that 83% of

the current sample had high levels of Vietnamese proficiency. However, participants were more likely to be proficient in oral rather than written modalities. Previous researchers have suggested that language maintenance may be promoted by strong Vietnamese literacy levels and literary tradition (Cahill & Nguyen 1995), highlighting the importance of supporting multilingualism across all modalities. In the current study, language proficiency for both the Vietnamese and English Proficient profiles was found to be mostly determined by language use, which is aligned with previous research in language learning and language development. Speakers who were Vietnamese Proficient used Vietnamese more and speakers who were English Proficient used English more. Other factors that were significantly associated with the different participant groups demonstrate the importance of comprehensive language profiles. In the current study those in the Vietnamese Proficient group earned less and believed that Vietnamese helped them learn English than speakers in the Shared Proficiency group. Those in the English Proficient group were younger, had lived in English-speaking countries longer, and were less likely to believe that maintaining Vietnamese helped improve academic study when compared with speakers in the Shared Proficiency group. These findings can inform engagement in culturally responsive practice and guide practices and policies in educational and language maintenance programs provided by professionals including SLPs, second language teachers, and educational psychologists to harness the cognitive, social, and emotional benefits of proficient multilingualism at the individual level (see Adesope, Lavin, Thompson, & Ungerleider, 2010; Blake et al., 2018; Bialystok, 2011; Cho, 2000; Park & Sarkar, 2007) and the benefits of a truly plurilingual society which will be necessary for economic prosperity and international relations in an increasingly globalized world (Clyne, 2008).

References

Adesope, O. O., Lavin, T., Thompson, T., & Ungerleider, C. (2010). A systematic review and metaanalysis of the cognitive correlates of bilingualism. *Review of Educational Research, 80*(2), 207–245. https://doi.org/10.3102/0034654310368803

Ahn, S., Chang, C., DeKeyser, R., & Lee-Ellis, S. (2017). Age effects in first language attrition: Speech perception by Korean-English bilinguals. *Language Learning, 67*(3), 694–733. https://doi.org/10.1111/lang.12252

Australian Bureau of Statistics [ABS] (2016). *Census of population and housing: General community profile*. Retrieved from https://www.abs.gov.au/AUSSTATS/abs@.nsf/productsbyCatalogue/B7AD1DB8CB27192 ECA2570D90018BFB2?OpenDocument

Australian Bureau of Statistics [ABS] (2018). *2016 Census QuickStats country of birth: People in Australia who were born in Vietnam*. Retrieved from https://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/5 105_036

Bankston, C. & Zhou, M. (1995). Effects of minority-language literacy on the academic achievement of Vietnamese youths in New Orleans. *Sociology of Education, 68*, 1-17. https://doi.org/10.2307/2112760

Baraldi, A. N., & Enders, C. K. (2010). An introduction to modern missing data analyses. *Journal of School Psychology, 48*, 5-37. https://doi.org/10.1016/j.jsp.2009.10.001

Baumgart, C. Q., & Billick, S. B. (2018). Positive cognitive effects of bilingualism and multilingualism on cerebral function: A review. *Psychiatric Quarterly, 89*(2), 273-283. https://doi.org/10.1007/s11126-017-9532-9

Bialystok, E. (2011). Reshaping the mind: The benefits of bilingualism. *Canadian Journal of Experimental Psychology/Revue Canadienne de Psychologie Expérimentale, 65*(4), 229–235. https://doi.org/10.1037/a0025406

Blake, H. L., Bennetts Kneebone, L. & McLeod, S. (2019). The impact of oral English proficiency on humanitarian migrants' experiences of settling in Australia. *International Journal of Bilingual Education and Bilingualism, 22*(6), 689-705. https://doi.org/10.1080/13670050.2017.1294557

Blake, H. L., McLeod, S., Verdon, S., & Fuller, G. (2018). The relationship between spoken English proficiency and participation in higher education, employment and income from two Australian censuses. *International Journal of Speech-Language Pathology, 20*(2), 202-215. https://doi.org/10.1080/17549507.2016.1229031

Blake, H. L., Verdon, S., & McLeod, S. (2019). Exploring multilingual speakers' perspectives on their intelligibility in English. *Speech, Language and Hearing.* Advance online publication. https://doi.org/10.1080/2050571X.2019.1585681

Blommaert, J. & Rampton, B. (2011) Language and superdiversity: A position paper. *Diversities 13*(2), 1-21.

Blommaert, J., & Varis, P. (2011). Enough is enough: The heuristics of authenticity in superdiversity. *Tilburg Papers in Culture Studies*, *2*, 1-13.

Bougie, E., Wright, S. C., & Taylor, D. M. (2003). Early heritage-language education and the abrupt shift to a dominant-language classroom: Impact on the personal and collective esteem of Inuit children in Arctic Québec. *International Journal of Bilingual Education and Bilingualism*, *6*(5), 349-373. https://doi.org/10.1080/13670050308667791

Bradshaw, J., Deumert, A., Burridge, K., Willoughby, L. & Izon, M. (2008). *Victoria's languages: Gateway to the world.* Melbourne, Australia: VITS Language Link.

Cahill, D. & Nguyen, X. T. (1995). The teaching and learning of Vietnamese in Australia and for Australia. *Journal of Vietnamese Studies, 8*, 17-24

Camarota, S. A., & Zeigler, K. (2014). *One in five U.S. residents speaks foreign language at home, record 61.8 million: Spanish, Chinese, and Arabic speakers grew most since 2010.* Retrieved from https://cis.org/sites/cis.org/files/camarota-language.pdf.

Cavallaro, F. (2005). Language maintenance revisited: An Australian perspective. *Bilingual Research Journal*, *29*, 561-582. https://doi.org/10.1080/15235882.2005.10162852

Cho, G. (1998). *Consequences of heritage language loss and maintenance and factors that affect heritage language development: Voices from second-generation Korean-American adults.* (Doctoral dissertation), Retrieved from https://search-proquest-com.ezproxy.csu.edu.au/docview/304455275?accountid=10344

Cho, G. (2000). The role of heritage language in social interactions and relationships: Reflections from a language minority group. *Bilingual Research Journal*, *24*, 369-384. https://doi.org/10.1080/15235882.2000.10162773

Clément, R., Gardner, R. C., & Smythe, P. C. (1980). Social and individual factors in second language acquisition. *Canadian Journal of Behavioural Science / Revue canadienne des sciences du comportement, 12*(4), 293-302. https://doi.org/10.1037/h0081081

Clyne, M. (1991). *Community languages: The Australian experience.* Cambridge, UK: Cambridge University Press.

Clyne, M. (2008). The monolingual mindset as an impediment to the development of plurilingual potential in Australia. *Sociolinguistic Studies, 2*(3), 347–366. https://doi.org/10.1558/sols.v2i3.347

Cook, V. (2016). Premises of multi-competence. In V. Cook & Li Wei (Eds.), *The Cambridge handbook of linguistic multi-competence* (pp. 1-25). Cambridge, UK: Cambridge University Press.

Cook, V. J. (Ed.) (2003). *Effects of the L2 on the L1.* Clevedon, UK: Multilingual Matters.

De Houwer, A. (2009). *Bilingual first language acquisition*. Clevedon, UK: Multilingual Matters.

DeKeyser, R. M. (2013). Age effects in second language learning: Stepping stones toward better understanding. *Language Learning, 63*, 52-67. https://doi.org/10.1111/j.1467-9922.2012.00737.x

Dixon, L. Q., Zhao, J., Quiroz, B. G., & Shin, J.-Y. (2012). Home and community factors
influencing bilingual children's ethnic language vocabulary development. *International Journal of Bilingualism, 16*(4), 541-565. https://doi.org/10.1177/1367006911429527

Dunn, A. L., & Fox Tree, J. E. (2009). A quick, gradient Bilingual Dominance Scale. *Bilingualism: Language and Cognition, 12*(3), 273-289. https://doi.org/10.1017/S1366728909990113

Eberhard, D. M., Simons, G. F. & Fennig, C. D. (Eds.). (2020). *Ethnologue: Languages of the world (23rd ed.).* Dallas, TX: SIL International. Retrieved from https://www.ethnologue.com/statistics/size

General Statistics Office of Viet Nam. (2016). *Area, population, and population density by province*. Retrieved from https://www.gso.gov.vn/default_en.aspx?tabid=774.

Gibbons, J., & Ramirez, E. (2004). *Maintaining a minority language: A case study of Hispanic teenagers.* Clevedon, UK: Multilingual Matters.

Guven, C., & Islam, A. (2015). Age at migration, language proficiency, and socioeconomic outcomes: Evidence from Australia. *Demography*, *52*(2), 513-542. https://doi.org/10.1007/s13524-015-0373-6

Ho, J. (2010). Acculturation gaps in Vietnamese immigrant families: Impact on family relationships. *International Journal of Intercultural Relations, 34*(1), 22-33. https://doi.org/10.1016/j.ijintrel.2009.10.002

Hopf, S. C., McLeod, S., & McDonagh, S. H. (2018). Linguistic multi-competence of Fiji school students and their conversational partners. *International Journal of Multilingualism, 15*(1), 72-91. https://doi.org/10.1080/14790718.2016.1241256

IBM Corp. (2017). *IBM SPSS Statistics for Windows, Version 25.0.* Armonk, NY: IBM Corp.

Jia, G., Aaronson, D., & Wu, Y. (2002). Long-term language attainment of bilingual immigrants: Predictive variables and language group differences. *Applied Psycholinguistics*, *23*(4), 599-621. https://doi.org/10.1017/S0142716402004058

Kang, H. S. (2015). Korean families in America: Their family language policies and home-language maintenance. *Bilingual Research Journal*, *38*, 275-291. https://doi.org/10.1080/15235882.2015.1092002

Kennedy, K. D., & Romo, H. D. (2013). "All colors and hues": An autoethnography of a multiethnic family's strategies for bilingualism and multiculturalism. *Family Relations, 62*(1), 109-124. https://doi.org/10.1111/j.1741-3729.2012.00742.x

Kim, C. E., & Pyun, D. O. (2014). Heritage language literacy maintenance: A study of Korean-American heritage learners. *Language, Culture and Curriculum, 27*(3), 294-315. https://doi.org/10.1080/07908318.2014.970192

Kipp, S., Clyne, M., & Pauwels, A. (1995). *Immigration and Australia's language resources*. Canberra, Australia: Australian Government Publishing Service.

Kula, S. M. & Paik, S. J. (2016). A historical analysis of Southeast Asian refugee communities: Post-war acculturation and education in the US. *Journal of Southeast Asian American Education and Advancement, 11*. https://doi.org/10.7771/2153-8999.1127.

Lam, H. (2011). *Raising children bilingually in mixed marriages: Stories of four Vietnamese-Caucasian families*. Unpublished doctoral dissertation, Arizona State University, Phoenix, AZ.

Lam, H. (2011). *Raising children bilingually in mixed marriages: Stories of four Vietnamese-Caucasian families.* (Doctoral dissertation), Retrieved from https://repository.asu.edu/attachments/93274/content//tmp/package-2qOcuQ/Lam_asu_0010E_11237.pdf

Leclercq, P., Edmonds, A., & Hilton, H. (Eds.). (2014). *Measuring L2 proficiency: Perspectives from SLA* (Vol. 78). Clevedon: Multilingual Matters.

Lee, J. S. (2002). The Korean language in America: The role of cultural identity in heritage language learning. *Language, Culture and Curriculum, 15*(2), 117-133. https://doi.org/10.1080/07908310208666638

Lehtonen, M., Soveri, A., Laine, A., Järvenpää, J., De Bruin, A., & Antfolk, J. (2018). Is bilingualism associated with enhanced executive functioning in adults? A meta-analytic review. *Psychological Bulletin*, *144*(4), 394. https://doi.org doi.org/10.1037/bul0000142

Li, P., Sepanski, S., & Zhao, X. (2006). Language history questionnaire: A web-based interface for bilingual research. *Behavior Research Methods, 38*(2), 202-210.

Luk, G., & Bialystok, E. (2013). Bilingualism is not a categorical variable: Interaction between language proficiency and usage. *Journal of Cognitive Psychology, 25*(5), 605-621. https://doi.org/10.1080/20445911.2013.795574

Luo, S. H., & Wiseman, R. L. (2000). Ethnic language maintenance among Chinese immigrant children in the United States. *International Journal of Intercultural Relations, 24*(3), 307-324. https://doi.org/10.1016/S0147-1767(00)00003-1

MacIntyre, P. D., Noels, K. A. & Clément, R. (1997). Biases in self-ratings of second language proficiency: The role of language anxiety. *Language Learning, 47*, 265-287. https://doi.org/10.1111/0023-8333.81997008

Marian, V., Blumenfeld, H. K., & Kaushanskaya, M. (2007). The Language Experience and Proficiency Questionnaire (LEAP-Q): Assessing language profiles in bilinguals and multilinguals. *Journal of Speech, Language, and Hearing Research, 50*(4), 940-967. doi:10.1044/1092-4388(2007/067)

McLeod, S. & Verdon, S. (2019). Multilingualism and speech sound disorders. In J. S. Damico & M. J. Ball (Eds.). *The SAGE encyclopedia of human communication sciences.* Thousand Oaks, CA: Sage.

McLeod, S., Margetson, K., Wang, C., Tran, V. H., Verdon, S., White, K., & Phạm, B. (2021). Speech acquisition within a 3-generation Vietnamese-English family: The influence of maturation and ambient phonology. *Clinical Linguistics and Phonetics*. https://doi.org/10.1080/02699206.2020.1862915

McLeod, S., Verdon, S., & International Expert Panel on Multilingual Children's Speech (2018). Tutorial: Speech assessment for multilingual children who do not speak the same language(s) as the speech-language pathologist. *American Journal of Speech-Language Pathology, 26,* 691-708. https://doi.org/10.1044/2017_AJSLP-15-0161

McLeod, S., Verdon, S., Wang, C., & Tran, V. H. (2019). Language proficiency, use, and maintenance among people with Vietnamese heritage living in Australia. *Journal of Monolingual and Bilingual Speech, 1*(1), 55-79. https://doi.org/10.1558/jmbs.10973

Milligan, G. W., & Cooper, M. C. (1985). An examination of procedures for determining the number of clusters in a data set. *Psychometrika, 50*, 159–179. https://doi.org/10.1007/BF02294245

Mu, G. M. (2015). A meta-analysis of the correlation between heritage language and ethnic identity. *Journal of Multilingual and Multicultural Development*, *36*(3), 239-254. https://doi.org/10.1080/01434632.2014.909446

Muthén, L., & Muthén, B. (1998-2017). *Mplus user's guide* (8th ed.). Los Angeles, CA: Muthén & Muthén.

Nguyen, A., Shin, F., & Krashen, S. (2001). Development of the first language is not a barrier to second-language acquisition: Evidence from Vietnamese immigrants to the United States. *International Journal of Bilingual Education and Bilingualism*, *4*, 159-164. https://doi.org/10.1080/13670050108667725

Ninnes, P. (1996). Language maintenance among Vietnamese-Australian students. *Australian Review of Applied Linguistics, 19*, 115-138. https://doi.org/10.1075/aral.19.2.06nin

Oh, J., & Fuligni, A. J. (2010). The role of heritage language development in the ethnic identity and family relationships of adolescents from immigrant backgrounds. *Social Development, 19*(1), 202-220. https://doi.org/10.1111/j.1467-9507.2008.00530.x

Olson, D. H. (2010). *FACES IV Manual*. Minneapolis, MN: Life Innovations.

Pallant, J. (2016). *SPSS survival manual: A step by step guide to data analysis using SPSS program* (6th ed.). London, UK: McGraw-Hill Education.

Paradis, J., Genesee, F., & Crago, M. (2011). *Dual language development and disorders: A handbook on bilingualism and second language learning* (2nd ed.). Baltimore, MD: Paul H. Brookes Publishing.

Paradis, M. (1987). *The Assessment of Bilingual Aphasia*. Mahwah, NJ: Erlbaum.

Park, C. Y. (2007). *Maintaining Korean as a heritage language*. Unpublished doctoral dissertation, Arizona State University, Phoenix, AZ.

Park, S. M., & Sarkar, M. (2007). Parents' attitudes toward heritage language maintenance for their children and their efforts to help their children maintain the heritage language: A case study of Korean-Canadian immigrants. *Language, Culture and Curriculum, 20*(3), 223–235. https://doi.org/10.2167/lcc337.0

Pauwels, A. (2016). *Language maintenance and shift.* Cambridge, UK: Cambridge University Press.

Peacock, M. (1999). Beliefs about language learning and their relationship to proficiency. *International Journal of Applied Linguistics*, *9*(2), 247-263. https://doi.org/10.1111/j.1473-4192.1999.tb00175.x

Peña, E. D., Gutiérrez-Clellen, V. F., Iglesias, A., Goldstein, B. A., & Bedore, L. M. (2014). *BESA: Bilingual English-Spanish Assessment*. San Rafael, CA: AR-Clinical Publications.

Phạm, B. & McLeod, S. (2016). Consonants, vowels, and tones across Vietnamese dialects. *International Journal of Speech-Language Pathology*, *18*, 122-134. https://doi.org/10.3109/17549507.2015.1101162

Phạm, B., & McLeod, S. (2019). Vietnamese-speaking children's acquisition of consonants, semivowels, vowels, and tones in Northern Viet Nam. *Journal of Speech, Language, and Hearing Research, 62*(8), 2645-2670. https://doi.org/10.1044/2019_JSLHR-S-17-0405

Phạm, B., McLeod, S., & Harrison, L. J. (2017). Validation and norming of the Intelligibility in Context Scale in Northern Viet Nam. *Clinical Linguistics and Phonetics, 31*(7-9), 665-681. https://doi.org/10.1080/02699206.2017.1306110

Pham, G., & Ebert, K. (2020). Diagnostic accuracy of sentence repetition and nonword repetition for Developmental Language Disorder in Vietnamese. *Journal of Speech, Language, and Hearing Research, 63*, 1521–1536. https://doi.org/10.1044/2020_JSLHR-19-00366

Pham, M. N. (1998). Language attitudes of the Vietnamese in Melbourne. *Australian Review of Applied Linguistics*, *21*, 1-20. https://doi.org/10.1075/aral.21.2.01pha

Portes, A., & Hao, L. (1998). E pluribus unum: Bilingualism and language loss in the second generation. *Sociology of Education, 71*(4), 269-294. https://doi.org/10.2307/2673171

Ryan, C. (2013). *Language use in the United States: 2011*. Retrieved from http://www.census.gov/prod/2013pubs/acs-22.pdf.

Sanchez, L. (2006) Bilingual/second-language research and the assessment of oral proficiency in minority bilingual children. *Language Assessment Quarterly, 3*, 117–149. https://doi.org/10.1207/s15434311laq0302_3

Short, D., & Fitzsimmons, S. (2007). *Double the work: Challenges and solutions to acquiring language and academic literacy for adolescent English language learners*. Washington, DC: Alliance for Excellent Education.

Tannenbaum, M. (2003). The multifaceted aspects of language maintenance: A new measure for its assessment in immigrant families. *International Journal of Bilingual Education and Bilingualism*, *6*, 374-393. https://doi.org/10.1080/13670050308667792

Tran, N. T. M. (1993). *A humanistic sociological study of the maintenance of Vietnamese language and culture in Australia* (Unpublished masters dissertation), University of Adelaide, Adelaide, Australia.

Tran, N. T. M. (2018). *Vietnamese Catholic immigrants in Australia and France: A comparative study of their cultural and linguistic adaptation, 2000-2005.* (Unpublished doctoral dissertation), University of Adelaide, Adelaide, Australia.

Tran, V. H., Verdon, S., Wang, C. & McLeod, S. (2020). *Factors affecting home language maintenance among multilingual children.* Manuscript in preparation.

Treffers-Daller, J., & Silva-Corvalán, C. (Eds.). (2016). Language dominance in bilinguals: Issues of measurement and operationalization. Cambridge University Press.

Veltman, C. (1983). *Language shift in the United States.* Berlin, Germany: Mouton de Gruyter.

Verdon, S., McLeod, S., & Wong, S. (2015). Supporting culturally and linguistically diverse children with speech, language and communication needs: Overarching principles, individual approaches. *Journal of Communication Disorders, 58,* 74-90. https://doi.org/10.1016/j.jcomdis.2015.10.002

Willoughby, L. (2018). *Language practices of migrant youth: From school to home.* Abingdon, UK: Routledge.

World Bank. (2016). *GDP growth.* Retrieved from http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG

Wright, S. C., & Taylor, D. M. (1995). Identity and the language of the classroom: Investigating the impact of heritage versus second language instruction on personal and collective self-esteem. *Journal of Educational Psychology, 87*(2), 241. https://doi.org/10.1037/0022-0663.87.2.241

Yashima, T. (2002). Willingness to communicate in a second language: The Japanese EFL context. *The Modern Language Journal*, *86*(1), 54-66. https://doi.org/10.1111/1540-4781.00136

Young, M. Y., & Gardner, R. C. (1990). Modes of acculturation and second language proficiency. *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement*, *22*(1), 59-71. https://doi.org/10.1037/h0078932

Table 1.

Fit Indices for Cluster Analysis of Vietnamese and English Language Proficiency with Standardised

Scores

Clusters	Fit indices			
	R^2	RMSSTD	Pseudo F	Pseudo t^2
2	0.47	0.24	229	260
3	**0.71**	**0.67**	**320**	**77.5**
4	0.78	0.72	309	91.7
5	0.84	0.34	342	677

Note. R^2 measures variances between each cluster; RMSSTD is the aggregated value of the standard deviation for all variables included in each cluster; Pseudo F refers to the ratio of the between-cluster to within-cluster variance; Pseudo t^2 reports the difference between two merged clusters. A larger value of R^2 and Pseudo F, and a smaller value of RMSSTD and Pseudo t^2 indicate a good cluster solution.

Table 2.

Cluster Characteristics and Cluster Comparisons on Vietnamese and English Language

Proficiency

	Vietnamese Proficient	Shared Proficiency	English Proficient				
	1	2	3				
	(N = 81)	(N = 135)	(N = 43)	F (2, 256)	p	η_p^2	Cluster comparisons
Vietnamese proficiency	0.16	0.51	-1.89	361.20	<.001	.74	2>1>3
English proficiency	-1.17	0.36	1.07	284.97	<.001	.69	3>2>1

Note. Standardised mean responses are provided for Vietnamese and English language proficiency for each of the three

clusters

Table 3.

Vietnamese and English Language Proficiency across Profile

Profiles	Language	Proficiency	Not at all n (%)	Not well n (%)	Average n (%)	Well n (%)	Very well n (%)	Mean (SD)	Valid data
			1	**2**	**3**	**4**	**5**	**/5**	
Vietnamese Proficient	Vietnamese	Speak	0 (0.0%)	0 (0.0%)	0 (0.0%)	24 (29.6%)	57 (70.4%)	4.70 (0.46)	81
		Understand	0 (0.0%)	0 (0.0%)	0 (0.0%)	22 (27.2%)	57 (72.2%)	4.72 (0.45)	79
		Read	0 (0.0%)	0 (0.0%)	2 (2.5%)	20 (24.7%)	59 (72.8%)	4.70 (0.51)	81
		Write	0 (0.0%)	0 (0.0%)	4 (5.0%)	25 (31.3%)	51 (63.8%)	4.59 (0.59)	80
		Overall						4.68 (0.46)	81
	English	Speak	8 (9.9%)	11 (13.6%)	52 (64.2%)	10 (12.3%)	0 (0.0%)	2.79 (0.79)	81
		Understand	8 (10.0%)	5 (6.3%)	52 (65.0%)	15 (18.8%)	0 (0.0%)	2.93 (0.81)	80
		Read	8 (9.9%)	7 (8.6%)	53 (65.4%)	13 (16.0%)	0 (0.0%)	2.88 (0.80)	81
		Write	8 (10.0%)	16 (20.0%)	47 (58.8%)	9 (11.3%)	0 (0.0%)	2.71 (0.80)	80
		Overall						2.82 (0.74)	81
Shared Proficiency	Vietnamese	Speak	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (2.2%)	132 (97.8%)	4.98 (0.15)	135
		Understand	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	133 (100.0%)	5.00 (0.00)	133
		Read	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	134 (100.0%)	5.00 (0.00)	134
		Write	0 (0.0%)	0 (0.0%)	0 (0.0%)	9 (6.7%)	125 (93.3%)	4.93 (0.25)	134
		Overall						4.98 (0.08)	135
	English	Speak	0 (0.0%)	0 (0.0%)	5 (3.7%)	97 (71.9%)	33 (24.4%)	4.21 (0.49)	135
		Understand	0 (0.0%)	0 (0.0%)	2 (1.5%)	89 (65.9%)	44 (32.6%)	4.31 (0.50)	135
		Read	0 (0.0%)	0 (0.0%)	0 (0.0%)	85 (63.0%)	50 (37.0%)	4.37 (0.48)	135
		Write	0 (0.0%)	0 (0.0%)	10 (7.4%)	88 (65.2%)	37 (27.4%)	4.20 (0.56)	135
		Overall						4.27 (0.44)	135
English Proficient	Vietnamese	Speak	1 (2.3%)	10 (23.3%)	12 (27.9%)	17 (39.5%)	3 (7.0%)	3.26 (0.98)	43
		Understand	1 (2.3%)	4 (9.3%)	9 (20.9%)	22 (51.2%)	7 (16.3%)	3.70 (0.94)	43

	Read	5 (11.6%)	19 (44.2%)	8 (18.6%)	10 (23.3%)	1 (2.3%)	2.60 (1.05)	43
	Write	10 (23.3%)	18 (41.9%)	9 (20.9%)	6 (14.0%)	0 (0.0%)	2.26 (0.98)	43
	Overall						2.95 (0.85)	43
English	Speak	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (7.0%)	40 (93.0%)	4.93 (0.26)	43
	Understand	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (4.7%)	41 (95.3%)	4.95 (0.21)	43
	Read	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (4.7%)	41 (95.3%)	4.95 (0.21)	43
	Write	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (9.3%)	39 (90.7%)	4.91 (0.29)	43
	Overall						4.94 (0.20)	43

Table 4.

Bivariate Associations between Language Proficiency Profiles and Factors

Aspect	Factors	Test Statistics	p	Effect Size	n
Demographics	Gender	$\chi^2 = 2.37$	$p = .31$	Cramer's V = .10	258
	Age	$F = 10.41$	***$p < .001$	$\eta_p^2 = .08$	243
	Income	$F = 23.72$	***$p < .001$	$\eta_p^2 = .18$	216
	Education	$\chi^2 = 34.89$	***$p < .001$	Cramer's V = .28	227
Migration status	Generation of immigrants	Fisher's exact = 137.80	***$p < .001$	Cramer's V = .59	235
	Number of years living in English-speaking countries	$F = 80.70$	***$p < .001$	$\eta_p^2 = .42$	226
Language use	Language use	$F = 100.07$	***$p < .001$	$\eta_p^2 = .44$	255
Language maintenance *(Maintaining Vietnamese helps you…)*	Maintain bonds with relatives	$F = 2.67$	$p = .07$	$\eta_p^2 = .02$	239
	Maintain Vietnamese cultural identity	$F = 1.43$	$p = .24$	$\eta_p^2 = .01$	237
	Build friendships	$F = 12.47$	***$p < .001$	$\eta_p^2 = .10$	238
	Improve academic study (school, university)	$F = 7.87$	***$p < .001$	$\eta_p^2 = .07$	231
	Communicate in English	$F = 15.36$	***$p < .001$	$\eta_p^2 = .12$	232
	Have wider career options	$F = 2.71$	$p = .07$	$\eta_p^2 = .02$	232
Cultural identity	Perceptions of cultural identity	$F = 18.60$	***$p < .001$	$\eta_p^2 = .15$	213
	Perception of the importance of maintaining Vietnamese identity	$F = .14$	$p = .87$	$\eta_p^2 = .001$	234
	Perception of the importance of maintaining Australian identity	$F = .97$	$p = .38$	$\eta_p^2 = .01$	222
Connections with Vietnamese culture	Frequency of attendance of community events	$F = 4.76$	**$p = .009$	$\eta_p^2 = .04$	238
	Regularly visiting Vietnam	$\chi^2 = 8.78$	*$p = .012$	Cramer's V = .19	241
	Vicinity to Vietnamese community	$\chi^2 = 3.16$	$p = .53$	Cramer's V = .08	243
	Availability of community meeting place	$\chi^2 = 2.78$	$p = .60$	Cramer's V = .08	240

Table 5.

Multinomial Logistic Regression of the Relative Importance of Factors

Profile	Factors	Odds Ratio	95% CI	*p*
Vietnamese Proficient vs. Shared Proficiency	Age	1.4	.96-2.05	0.08
	Income	0.61	.46-.81	0.001**
	Education 1 (Bachelor degree)	2.42	.78-7.51	0.13
	Education 2 (Graduate diploma and above)	0.48	.16-1.41	0.18
	Number of years living in English-speaking countries	1.16	.64-2.08	0.63
	Language use	2.66	1.26-5.65	0.01*
	Help build friendships	0.84	.56-1.26	0.4
	Help improve your academic study (school, university)	0.89	.53-1.49	0.65
	Help you communicate in English	1.75	1.07-2.86	0.03*
	Perceptions of cultural identity	0.93	.60-1.44	0.73
	Frequency of attendance of community events	0.93	.64-1.36	0.72
	Regularly visiting Vietnam	0.79	.36-1.75	0.57
English Proficient vs. Shared Proficiency	Age	0.29	.11-.73	0.008**
	Income	1.14	.50-2.59	0.75
	Education 1 (Bachelor degree)	2.6	.02-320.66	0.70
	Education 2 (Graduate diploma and above)	1.41	.01-156.45	0.89
	Number of years living in English-speaking countries	72.96	6.08-875.84	0.001**
	Language use	0.01	.00-.23	0.004**
	Help build friendships	2.74	.92-8.17	0.07
	Help improve your academic study (school, university)	0.16	.03-.80	0.03*
	Help you communicate in English	1.08	.39-2.98	0.88
	Perceptions of cultural identity	0.51	.16-1.59	0.25
	Frequency of attendance of community events	0.47	.17-1.29	0.14
	Regularly visiting Vietnam	5.14	.51-51.90	0.17

Figure 1. Standardized mean responses for Vietnamese and English language proficiency for each of the three clusters.
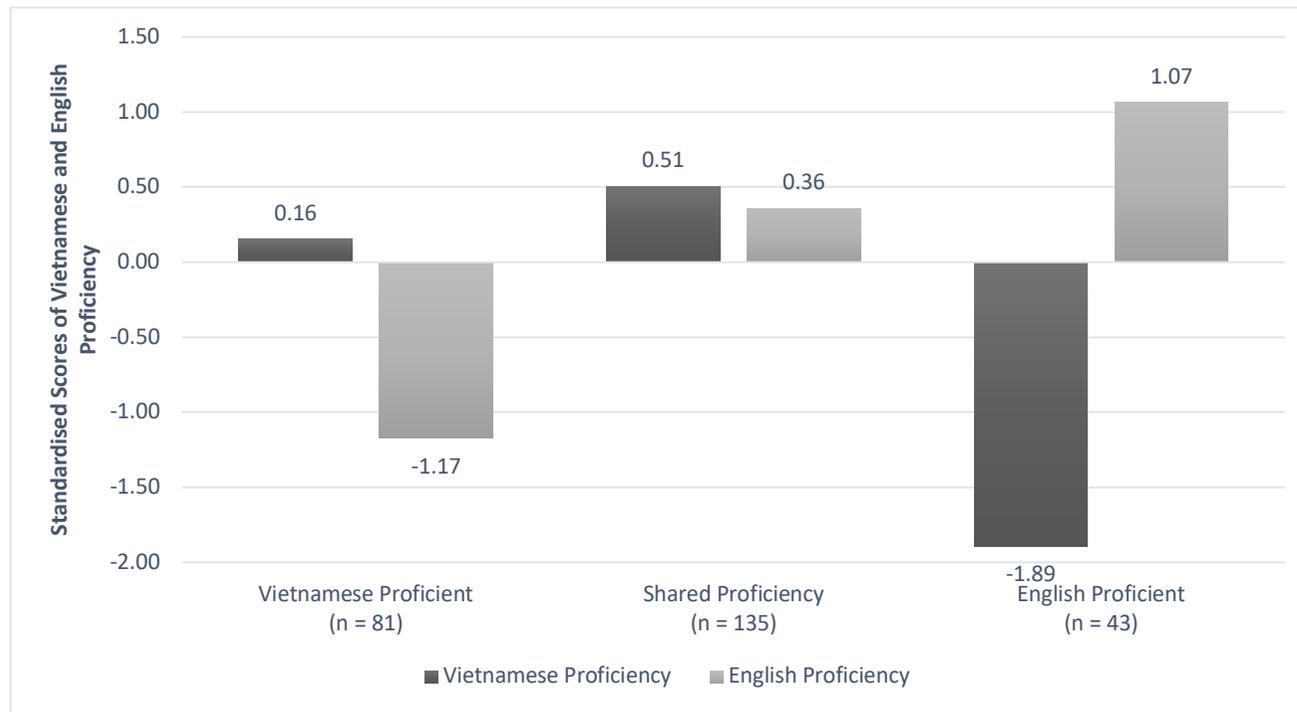
Supplemental Appendix. VietSpeech linguistic multicompetence questions[a]
If appropriate, replace [Vietnamese] with the language(s) spoken.

Language Background

1. What is your first (home) language?
2. Which languages do you speak in order of proficiency?
3. How *well* do you speak, understand, read, and write Vietnamese and English in your daily life?

Language	Domain	Very well	Well	Average	Not well	Not at all
Vietnamese	a) Speak	□	□	□	□	□
	b) Understand	□	□	□	□	□
	c) Read	□	□	□	□	□
	d) Write	□	□	□	□	□
English	a) Speak	□	□	□	□	□
	b) Understand	□	□	□	□	□
	c) Read	□	□	□	□	□
	d) Write	□	□	□	□	□

Language Use

4. What language(s) *do you* use with the following **people**?

Situations	1 English always	2 Mostly English sometimes Vietnamese	3 English and Vietnamese equally	4 Mostly Vietnamese sometimes English	5 Vietnamese always	6 Another language	7 Not applicable
a) At home (overall)	□	□	□	□	□	□	□
b) At home (between you and children)	□	□	□	□	□	□	□
c) At home (between you and your partner)	□	□	□	□	□	□	□
d) With your mother	□	□	□	□	□	□	□
e) With your father	□	□	□	□	□	□	□
f) With Vietnamese-speaking grandparents	□	□	□	□	□	□	□
g) With English-speaking grandparents	□	□	□	□	□	□	□
h) With older siblings	□	□	□	□	□	□	□
i) With younger siblings	□	□	□	□	□	□	□
j) With other relatives (in Vietnam)	□	□	□	□	□	□	□
k) With other relatives (in English-speaking countries)	□	□	□	□	□	□	□
l) With Vietnamese friends	□	□	□	□	□	□	□
m) With non-Vietnamese friends	□	□	□	□	□	□	□

5. What language(s) *do you* use in the following **places**?

	1	2	3	4	5	6	7

Situations	English always	Mostly English sometimes Vietnamese	English and Vietnamese equally	Mostly Vietnamese sometimes English	Vietnamese always	Another language	Not applicable
a) At work	□	□	□	□	□	□	□
b) When studying (at school/ university/ college)	□	□	□	□	□	□	□
c) When in Vietnamese stores/restaurants	□	□	□	□	□	□	□
d) When in non-Vietnamese stores/restaurants	□	□	□	□	□	□	□
e) At the religious gatherings (temple/church)	□	□	□	□	□	□	□
f) During extra-curricular activities (e.g., sport/ music)	□	□	□	□	□	□	□
g) During cultural festivals (e.g., Tet/Vietnamese new year)	□	□	□	□	□	□	□
h) During holidays in Vietnam	□	□	□	□	□	□	□

6. What language(s) *do you* use in the following **communication/media situations**?

Situations	1 English always	2 Mostly English sometimes Vietnamese	3 English and Vietnamese equally	4 Mostly Vietnamese sometimes English	5 Vietnamese always	6 Another language	7 Not applicable
a) Social media (Facebook, Instagram)	□	□	□	□	□	□	□
b) Reading the news (print or online)	□	□	□	□	□	□	□
c) Reading magazines	□	□	□	□	□	□	□
d) Reading books	□	□	□	□	□	□	□
e) Listening to the radio	□	□	□	□	□	□	□
f) Listening to music							
g) Watching television	□	□	□	□	□	□	□
h) Watching movies	□	□	□	□	□	□	□

Migration Information
7. Which country were you born in? Which countries have you lived in?
8. How long have you been living in Australia?
9. How many years have you lived in an English-speaking country?
10. Which generation of immigrant are you?
   a) **First generation** (You were born outside of Australia and arrived in Australia as an adult or late teen)
   b) **1.5 generation** (You were born outside of Australia but immigrated to Australia as a child or teenager)

c) **Second generation** (You were born in Australia to parents who immigrated to Australia)
d) **Third generation** (You were born in Australia and your grandparents immigrated to Australia)
e) Other (specify)

11. What is your **mother's** first (home) language? □ Vietnamese □ English □ Other (specify)
12. Which languages does **your mother** speak in order of proficiency?
13. What is your **father's** first (home) language? □ Vietnamese □ English □ Other (specify)
14. Which languages does **your father** speak in order of proficiency?

Community
15. Do you live near a large number of Vietnamese people? □ Yes □ No □ Unsure
16. Is there a place in your community where Vietnamese people meet? □ Yes □ No □ Unsure
17. How often do you attend local Vietnamese community activities/ gatherings/ events/ festivals/ religious events? □ Never □ Rarely □ Sometimes □ Very often □ Always
18. Do you regularly visit Vietnam? □ Yes □ No
19. Do you intend to go back to live in Vietnam? □ Yes □ No □ Unsure

Language Maintenance
20. What benefits are there for you maintaining Vietnamese?

	Not important at all	Somewhat important	Important	Extremely important
a) Maintaining bonds with relatives	□	□	□	□
b) Maintaining Vietnamese cultural identity	□	□	□	□
d) Helping building friendships	□	□	□	□
e) Improving academic study (school, university)	□	□	□	□
f) Helping English learning	□	□	□	□
g) Having wider career options	□	□	□	□
h) Others (please provide details)	□	□	□	□

21. What do you do to maintain your Vietnamese language (e.g., watch Vietnamese movies)?

Cultural Identity
22. Please indicate where you see yourself along the scale below:

1	2	3	4	5	6	7	8	9	10
I consider myself Vietnamese									I consider myself Australian

23. To what extend do you agree with the following statements?

	Strongly disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Strongly agree	Not applicable
a) It is important to maintain my Vietnamese culture, values and language	□	□	□	□	□	□
b) It is important to maintain my Australian culture, values and language	□	□	□	□	□	□

[a] Questions were informed by Blake, Verdon and McLeod (2019), Cavallaro (2005), Hopf, McLeod and McDonagh (2016), Kang (2015), Lam (2011, p. 136), Luo and Wiseman (2000), Park (2007), Olson (2010), and Tannenbaum (2003).

For more information about VietSpeech see: https://www.csu.edu.au/research/vietspeech/overview